The Mining Journal

Established 1835 — Railway & Commercial Gazette

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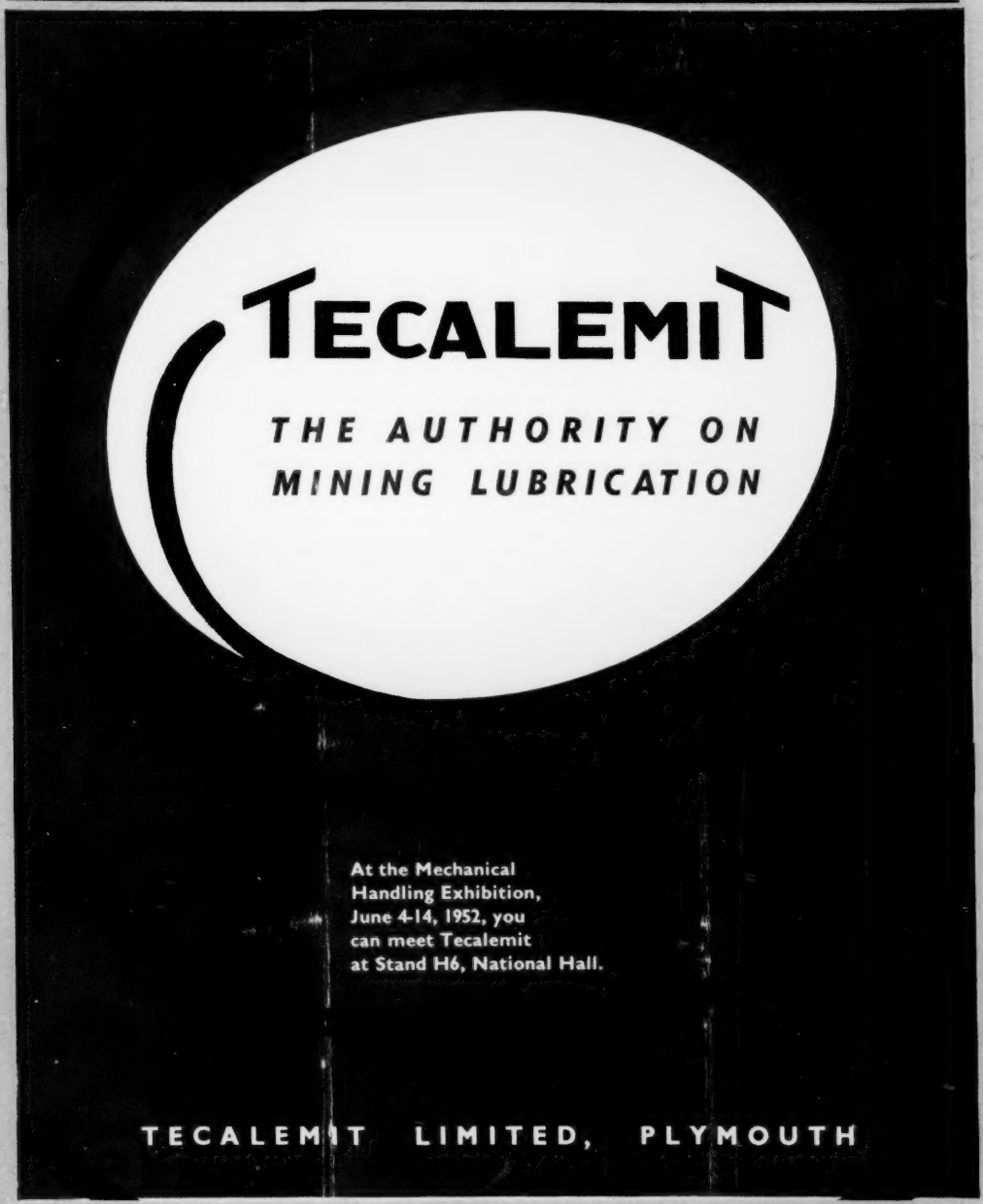

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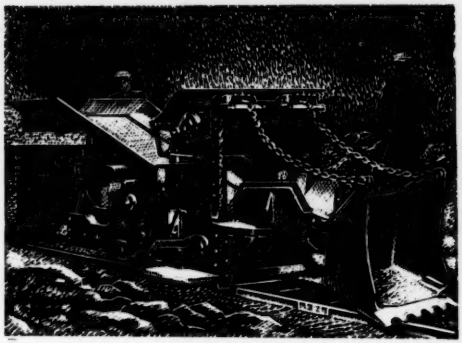

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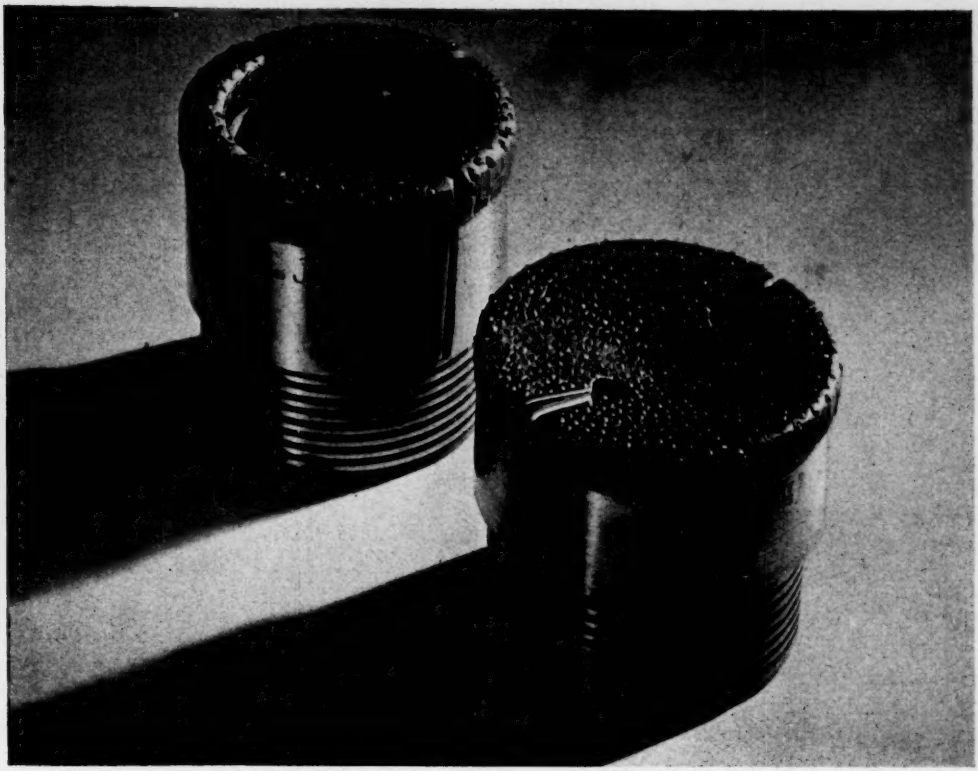

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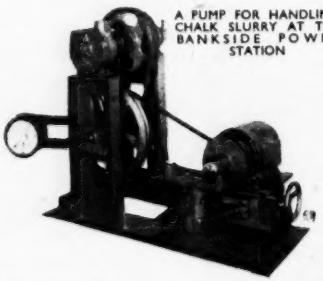

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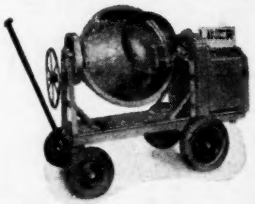

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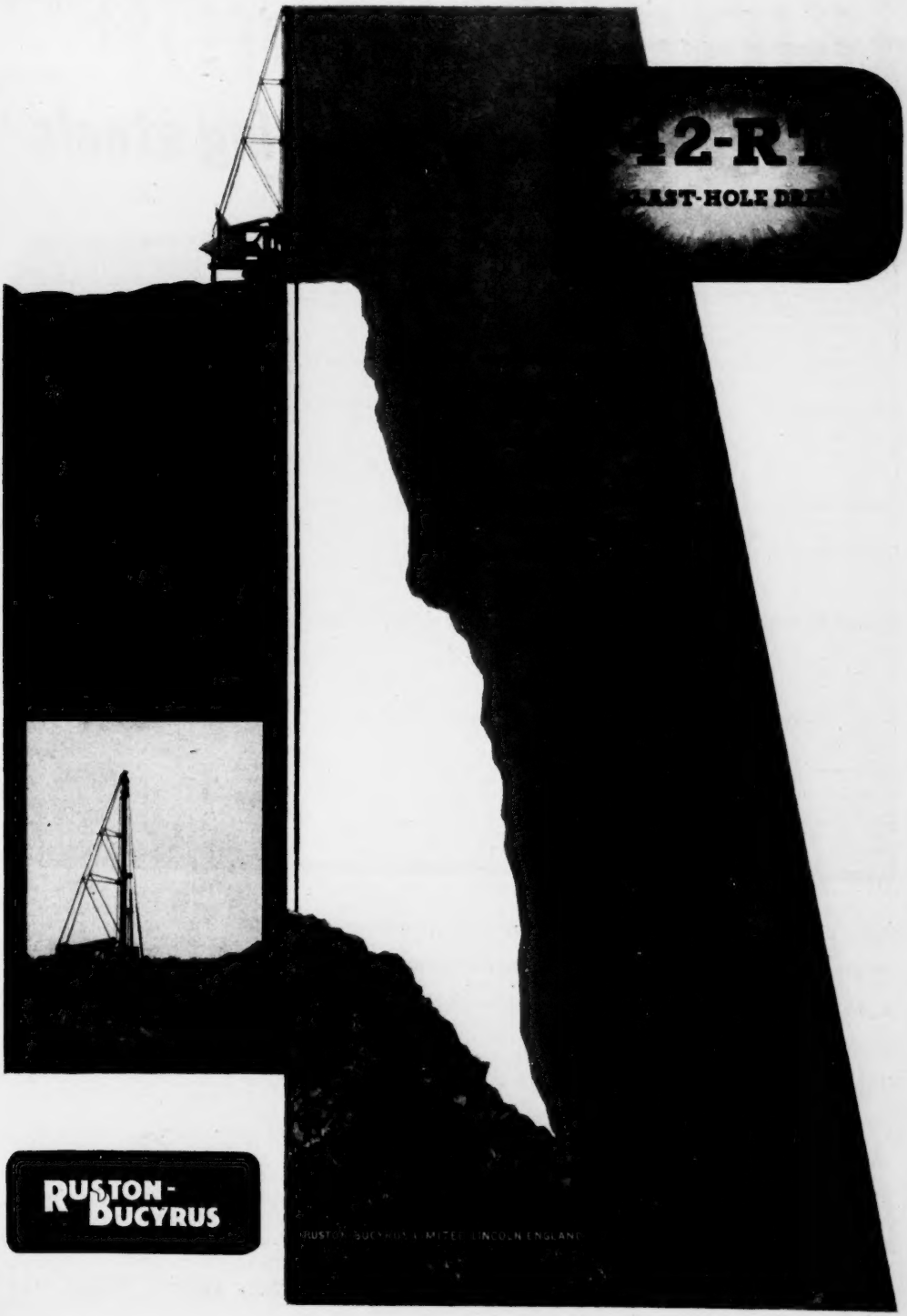
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TENSILE STRENGTH		Izod Impact ft.-lb. min.	En No.	Type	En No.	Type
t.s.i.	kg/mm²					
40–60	63–94	50	37	5% Ni		
45 min.	71	40	33	3% Ni		
,,	,,	,,	34	2% Ni-Mo (lower C.)		
,,	,,	30			351	¼% Ni-Cr
,,	,,	25			361	"15" carbon low-alloy
55–75	86–118	35	36T	3% Ni-Cr		
55 min.	86	,,	325	Low Ni-Cr-Mo		
,,	,,	25	35	2% Ni-Mo (higher C.)		
,,	,,	20			352	1% Ni-Cr
,,	,,	15			362	"20" carbon low-alloy
65–80	102–126	30	36V	3% Ni-Cr		
65 min.	102	,,	38	5% Ni		
,,	,,	20			353	1¼% Ni-Cr
,,	,,	—			363	"25" carbon low-alloy
75 min.	118	20			354	1¾% Ni-Cr
85 min.	134	25	39A	4¼% Ni-Cr		
,,	,,	,,	39B	4¼% Ni-Cr-Mo		
,,	,,	,,	320	2% Ni-Cr-Mo		
,,	,,	,,			355	2% Ni-Cr-Mo (low-Cr)

Eight new specifications for case-hardening steels have been issued by the British Standards Institution. The new steels are intended to replace, as an emergency measure, the more highly alloyed case-hardening steels in current use.

The table gives details, based on mechanical properties, of the new economy steels which are alternative to the standard alloy steels. Many of these standard steels will again be available when the present situation has passed.

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The Mining Journal
Established 1835

Vol. CCXXXVIII No. 6093 LONDON, MAY 30, 1952 Price 8d

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NOTES AND COMMENTS

The Nickel Resources of Manitoba

It was recently pointed out that a new nickel development of considerable importance has reached an advanced stage at Sherritt-Gordon Mines in Northern Manitoba. This information comes as part of the overall story of the development of the Western Provinces of Canada, wherein Alberta oil and the new pipeline to be constructed this year across the Rockies from the oilfields to the Pacific coast, are contributory factors.

In an "electrifying" address before the Canadian House of Commons on April 24, Mr. G. D. Weaver, the member for Churchill, Manitoba, outlined the enormous potentials of the area, and among other statistics, estimated that approximately 75 per cent of the world's nickel ore reserves are situated in Northern Manitoba.

In "lifting the lid off the treasure box of the Northland," Mr. Weaver said that few appreciated the possibility of Northern Manitoba arising as the coming nickel capital of the world. He emphasized that even this optimistic statement was conservative in its estimates. With the vast ore reserves of nickel that existed in the region, it was apparent that in Manitoba's northern districts there were four potential Sudburys. In one of these areas were five tremendous ore bodies, one of which was sheared diagonally from one side at the top to the bottom. Thus the ore body subtracted in area as its depth increased, while the sheared section increased in area as the lie grew progressively deeper.

In précis it is stated that, in this one ore body, there are 250,000,000 tons of ore above 1,000 ft., although this considerable reserve is represented as not completing the ore deposits above 1,000 ft. in this one block of the five in the area.

Mr. Weaver told the House that the Northern Manitoba ore bodies compare in size with the iron ore deposits of Labrador and the "reef" runs for approximately 300 miles.

In addition to these deposits of nickel, copper is present in considerable supply in the Northern Manitoba area. Not far from the nickel deposits, a similar lie of copper-bearing reef is known to exist. The future of copper production in the area is therefore a matter for conjecture at the present time. As a final consideration, a tungsten mine of rich deposit is to be brought into production in the near future.

Roan and R.S.T. Seek to Migrate

The Roan Antelope and Rhodesian Selection Trust group of copper mines have announced that they are applying to the Treasury for consent to migrate to Northern Rhodesia. The companies' formal announcement indicates that the immediate cause of the application being made is "the recent emergence in Northern Rhodesia of political and industrial conditions calling for the direction of the policies of the companies from within the Territory."

As in the recent case of Wankie Colliery, this application is no doubt being strongly supported by the Colony itself and it is understandable enough that the Legislative Council should feel strongly on the desirability of locating the control of an industry, which provides the greater part of the Territory's revenue, in Lusaka rather than in London.

The Northern Rhodesian copper belt seems likely to be about to enter on a further period of expansion for which much additional capital will be required, and apart from any political or social considerations which may be influencing the projected move, there can be no doubt that the fiscal climate of Lusaka, which has already shown substantial tax savings to the Anglo American copper companies, promises to be a very much healthier one for any future capital issues than that offered by the City of London.

If, as seems likely, this present application receives Treasury consent, there will doubtless be other London mining companies which would not be sorry to find themselves subjected to similar local political pressures in their respective areas of operation, either to assist them to win a merciful release from the dead hand of the Treasury or else, as we would like to hope, to bring home to the Chancellor of the Exchequer the devastating effect which his policy and that of his predecessors is having on the London mining capital market.

Mexico's Mining Production in 1951

Mexico's mining and metallurgical production registered a sharp increase in 1951 compared with figures over the past five years, according to information now released by the Bureau of Statistics of the Department of National Economy. There were 870,316 tons of minerals produced last year (including gold, silver, copper, lead, zinc, graphite, mercury, iron, manganese, cobalt, cadmium and bismuth) with a combined total value of 2,424,000,000 pesos (approximately $280,553,760).

Top item of minerals produced last year was iron, with 312,580 tons registered, while least in production statistics was cobalt with only 1,754 kilos. Iron production was valued at 43,000,000 pesos ($4,976,520) while cobalt only brought in 71,423 pesos ($8,255).

Although lead production was second in tonnage production figures, it was in first place in peso value. Amount of lead produced amounted to 225,468 tons valued at 745,000,000 pesos ($86,176,000). Zinc production, at 180,064 tons had a value of 636,000,000 pesos ($73,605,740).

Mexico still maintained its world lead in silver production, with a slight margin over the United States, with +136,000 kilos produced with a value of 335,472,026 pesos ($38,826,564). Gold was fifth in total value figures with 118,000,000 pesos ($13,357,220) obtained from a production of 12,237 kilos. While both gold and silver production has registered declines, this is due to reduced exploitation of these minerals and the government is now studying means to boost figures upward once more.

Fourth place both in volume and value went to copper production with 67,351 tons bringing 334,915,600 pesos ($38,762,291). Value of other minerals produced were: cadmium 53,000,000 pesos ($6,134,220); manganese 28,000,000 pesos ($3,240,720); graphite, 17,000,000 pesos ($1,967,480); bismuth, 15,000,000 pesos ($1,736,000); mercury, 14,000,000 pesos ($1,620,260); tungsten, 12,000,000 pesos ($1,388,880) and tin 9,000,000 pesos ($1,041,660).

Total production of mining and metallurgic products in 1951 was increased by 4,219 tons while value increased by 421,000,000 pesos ($48,726,540).

Trends of Bauxite Development in French Guinea

In the March 14 issue of *The Mining Journal*, Dr. Maurice Moyal discussed the role of E.C.A. in the development of French Africa's mineral resources. In his comprehensive article it was inadvertently stated that the Kassa project of Bauxites du Midi in French Guinea was being financed with funds provided by E.C.A. It has since been established that this is not the case, as the project is being financed with funds advanced to Bauxites du Midi by the Aluminium Ltd. group of companies, of which Bauxites du Midi is a subsidiary.

Further information has recently come to hand from the U.S. Bureau of Mines of mineral developments in French Guinea, which in the instance of bauxite mining at least are closely linked with the highly publicized future of Canadian aluminium development. According to the Bureau, is is anticipated that the bauxite mine on the island of Kassa in the Loos Archipelago, will commence operations in October of this year, at which time it will be equipped to ship from 300,000 tonnes to 400,000 tonnes of ore annually. The life of the deposits on this island is expected to approximate ten to fifteen years, and total investment in the Kassa mine will in all probability approach $U.S.6,850,000.

The Coal Industry

(From Our Coal Correspondent)

An executive committee has been appointed by the National Coal Board to take control of open-cast operations, but the Ministry of Fuel and Power still retains control over the requisition of land and wayleaves and the restoration of the sites for farming and other purposes remains, as before, the responsibility of the Ministry of Agriculture. The new committee consists of two members of the Board and three former officials of the Directorate of Open Cast Production, who now act as heads of the Civil Engineering, Administrative and Finance departments, respectively. There are 126 of these mines in production at the present time, mostly in Scotland, Durham, Yorkshire, the Midlands and South Wales. They are completely mechanized and are being operated by contractors who employ about 11,000 men. The production last year amounted to 11,000,000 tons which thus gives a yearly output per man of 1,000 tons compared with about 300 tons yearly for each man employed in deep mining.

The official Report on the explosion which occurred at Eppleton Colliery, Durham, on July 6 last year contains sharp criticisms of the electrical equipment of some American mining machinery. The source of the ignition which led to the explosion was traced to a fault in the master control box of a Joy loader and it is also stated in the report that several fires have occurred during recent years on some of the battery operated shuttle cars used in conjunction with these loaders in room and pillar workings. In view of these mishaps the Deputy Chief Inspector of Mines has decided to ban the use of shuttle cars for pillar extraction and on retreating long-wall faces. He has also vetoed the use of all imported electrically driven machines in safety-lamp mines until such machines have been modified to conform with British flameproof standards. The National Coal Board took action along these lines immediately after the disaster at Eppleton by reverting to hand getting and loading in all "brokens" workings for the time being.

It has often been asserted that American machines are sufficiently well designed to give adequate protection against the lesser risks which are believed to be associated with coal mining in the U.S.A. than in Great Britain and Western Europe but this view is being challenged in several quarters in the U.S.A. at the present time because of an unfortunate increase in the number of miners killed last year in mine explosions, and particularly after the disastrous explosion in the Orient mine at West Frankfort, Illinois, on December 21, in which 119 men lost their lives. The cause of the ignition in this case has not been definitely established but other circumstances were somewhat similar to those at Eppleton. In both cases the firedamp emerged from the partially stowed abandoned workings in the rear into the main ventilating current, and there formed an explosive mixture. It is difficult to avoid this danger in "brokens" workings and on reatreating long-wall faces and this was probably the chief consideration which prompted the decision to suspend trackless haulage by shuttle cars in such workings in Great Britain, pending the drafting of new regulations, for the use of these and other types of electrical machines underground.

The Economic Survey for 1952 again lays stress on the need for more coal but it is not anticipated that the 1951 rate of increase in O.M.S. can be maintained. Any substantial increase in the total output can therefore only come from additional labour and quicker promotion of the present workers from secondary tasks to jobs at the coal face. The survey shows that home consumption in-

creased by 2.75 per cent in 1951 but output went up by only 2.73 per cent. One of the most serious obstacles to the recruitment of labour is the shortage of accommodation in the newer mining areas and other districts where modern methods could be applied most effectively to accelerate production. In view of this the National Coal Board have established and financed a Housing Association on a limited liability basis to engage independently or in collaboration with Local Authorities in the building of miners' houses in all areas where they are needed, and this work is to be speeded up by Government priorities for building materials and labour.

The official winter period for the delivery of coal to home consumers in Great Britain ended last month with distributed stocks amounting to 13,000,000 tons, compared to 9,500,000 tons last year, and this enabled the customary price reduction for summer deliveries to be made a month earlier than usual. Among the reasons given for this improvement were the restrictions on exports during the second half of 1951, a slightly greater output and better transport facilities.

Mechanization is now making a significant contribution to the total output of deep mined coal but one of its detrimental effects is also becoming increasingly evident in the rising proportion of small coal which is being diverted to the home markets. Industrial and domestic consumers have been warned that this trend will increase and the necessity of finding more efficient methods of burning the smaller sizes will give further impetus to the campaign for the abolition of open grates for space heating.

Congo Output in 1951

(From Our Own Correspondent)

Brussels, May 19.

The Belgian Colonial Office has communicated to me the mining production returns for the Belgian Congo and Ruanda-Urundi for the last year, and the two years preceding. They are as follows:

Product	1949	1950	1951
Bastnaesite ..... tonnes	44	54	124½
Bismuth ..... kilos	540	730	322
Bitumen ..... tonnes	50	365	Unreleased
Cadmium ..... kilos	24,835	29,668	24,316
Coal ..... tonnes	152,370	159,967	217,900
Cobalt* ..... tonnes	4,403	5,148	Unreleased
Copper..... tonnes	141,399	175,920	191,959
Diamonds (industrial) carats	9,099,545	9,604,128	10,027,103
Diamonds (gems) .....carats	550,423	543,443	537,652
Gold (fine) ..... kilos	10,384	10,557	10,958
Lead concentrates ... tonnes	450	—	—
Manganese ..... tonnes	6,123	8,495	35,472
Monazite ..... tonnes	—	—	37
Salt ..... tonnes	—	—	550
Silver ..... tonnes	141½	139	118
Tantalo-columbite ... tonnes	116	135	96
Tin ..... tonnes	13,365	12,764	12,874½
Tungsten..... tonnes	166	99	346½
Uranium	Secret	Secret	Secret
Radium	Secret	Secret	Secret
Zinc ..... tonnes	55,420	74,805	88,705

*Union Minière's figures.

Commenting on these results, the Banque du Congo Belge makes the following comments: Increased output was obtained in the case of manganese, zinc, copper and cobalt, due to more hydro-electric power becoming available and the progress made in bringing mines and plants more up to date. As regards diamonds, increased mechanization contributed to the increased output.

Higher selling prices stimulated the gold output. The Congo authorities have not imitated the policy of Southern Rhodesia and the Gold Coast as regards the sale of the whole of their production on the free market. Such a step would have been welcomed by producers, but in view of engagements with the International Monetary Fund, the authorities did not see themselves in a position to meet the wishes of producers. Mr. Franz Leemans, chairman and managing director of Kilo-Moto, in the *Bulletin* of the Societé Belge d'Etudes et d'Expansion of Liège estimates the present price of gold at 1.8 times that of 1938, while the cost of native labour is now 3.2 times the 1938 figure and the mining equipment—four times.

The Bank estimates the exports of mining products at 454,000 tonnes last year as compared with 342,000 tonnes in 1950; while the customs valuation was Fcs. B.9,769,000,000 compared with 6,665,000,000. These exports represented 42 per cent by weight of the total compared with 37 per cent in 1950. They were valued in each case at 49 per cent of the export figure total. Copper was by far the most valuable export.

Indian Mica

(From Our Own Correspondent)

Colombo, May 8

The Central Mica Advisory Committee of India have recommended to the Government of India that the export of mica scrap be stopped forthwith.

As regards leasing, the Committee recommended that the ten sq. mile limit should be observed. The Committee felt that as standards had not yet been finally fixed, time was not ripe for the setting up of a Mica Marketing Board. The Committee considered how far the present slump had affected the mica industry but was of the opinion that the position was not as gloomy as it was feared.

The mica industry in Rajasthan is to-day faced with a serious crisis due to the recent heavy fall in prices, according to the Rajasthan Industrial and Mining Association. In a memorandum submitted to the Government of India the Association says that the United States, which is the chief importer of mica, has considerably reduced its imports. The Government of India must tap other markets for the sale of mica and take steps to increase the consumption of mica in the country. Ultimately, this will be the best solution, says the Association, for as soon as foreign countries find out a suitable substitute, which they are striving to do, the industry in India will face sudden collapse with all its attendant evils. One of the main factors contributing to the fall of prices is the export of large quantities of mica waste at a very low cost. This has reduced the demand for other types and grades of mica.

Indian exporters do not supply mica according to sample and this is one of the main reasons for the fall in prices of mica. It is necessary that only sound firms should be given freedom to export. The system of export licences should be introduced for this commodity, the Association further urges. A survey committee should also be set up to check the consignments before export. The Association also declares that due to serious depression in the present mica trade and the fall in prices of mica in general and that of smaller size in particular, much capital of mica lessees in Rajasthan has been locked in the ever-accumulating stocks. As a result the full working of mica mines has become a financial problem. Under the present conditions and until the situation improves, mining operations and mica production should be curtailed down to 50 per cent of the present figures.

During April to December, 1951, India exported 320,139 cwt. valued at Rs.104,600,000.

Diamond Drilling Symposium in Johannesburg

By A SPECIAL CORRESPONDENT

In this, the third and final portion of the report on the three day symposium which opened in Johannesburg on Monday, April 21, under the auspices of the Chemical, Metallurgical and Mining Society of South Africa, the papers presented dealt with practical diamond drilling in several parts of the Commonwealth.

Mr. H. J. Wedgwood described the development of blast hole drilling at the Roan Antelope Copper Mine. Since the mining and blast-hole drilling methods have been described before, for instance by H. F. C. Neville and W. K. Burgess in 1948, he described at first the general outlay and conditions of this mine, the main feature of which is a quartz string in the ore body. The stoping methods consisted of drilling blast holes of 60 ft. length from both sides. The method was to cut back a slot with coring into grizzlies at sub levels. The latest method developed was ring blasting at 6 ft. intervals with BX diamond core drills. The blast holes were filled with 6 in. dynamite using sewer rods for pushing, electrically detonated. Of the 4,000,000 tons of ore broken annually, 70 per cent was broken by BX blasts; 120 diamond drilling machines are in operation, the balance being percussion drills.

PNEUMATIC DRILLING EQUIPMENT

A wide variety of pneumatic drills is used from 10 h.p. to 12 h.p., with the tendency directed towards higher horsepowers. Speeds grade between 1,500 r.p.m. to 1,800 r.p.m. with a strong bias to the lower speeds, and air pressure is 80 lb./sq. in. It is felt that different speeds are necessary in relation to the differing types of rock, and that slow spindle speeds give an increased performance. This factor is shown by the preference for certain speeds in different years. Before 1949, a speed of 1,800 r.p.m. was preferred, in 1949 itself a speed of 1,500 r.p.m., and in 1951 a speed of 820 r.p.m., the latter figure referring to longer pillar drilling. The feed range of the screw feed machines is from 100 to 400 rev./in. whilst originally a performance of only 26 ft. per machine was attained, this performance has now been extended to 57 ft./shift, a factor which probably indicates a considerable increase in the life of the bit. The life of the drill machine itself is approximately five years, which corresponds to 100,000 ft. drilled. Rods and core barrels are of South African manufacture and are considered to be of shorter life than those processed in foreign material. This deterrent could be overcome by hard facing. The present life of a core barrel is 6,000 ft.

The rods are greased periodically in order to reduce vibration and increase life. The last handset bits were abandoned in 1949 owing to prohibitive costs, and have been replaced by machine set bits. These embody 18 ct. diamond for coring bit and 26 ct. for non-coring bit, and pencil coring bits are also used to advantage. The current average performance per bit is 275 ft. In the average, 918,000 ft. are drilled per year at a cost of 2.162 sh./ft. These drilling operations are performed in groups comprising one European and 16 Africans operating six drills.

It is intended to improve the present practice by introducing a self-contained hydraulic feed, that is, a feed independent of the water pressure system with its variations, with the purpose of obtaining a constant pressure of the bit. It is further intended to experiment with still lower speeds and with drill bits provided with larger stones. Of additional great importance is the use of an abrasion resisting matrix, as the previously mentioned quartz strings are abruptly encountered. A special low speed rotary machine of 150 to 200 r.p.m. is on order for drill bits with sintered carbide diamond impregnated slugs.

Experience shows that percussion bits with sintered carbide tips produce 95 ft./shift compared with 57 ft. shift diamond drilling. The latter is considerably larger in diameter. With this performance there is little to choose between the equipments, and it is desirable to discover methods of increasing the efficiency of the diamond bit.

Current diamond drilling practice at Rhokana, the largest copper mine in the world, was reviewed by Mr. O. B. Bennett. He pointed out that originally diamond drilling was introduced to drill pillars left as studied in Canadian practice. This method had extended to stoping, so that in 1949 practically all drilling was diamond drilling.

The first machines used were locally built handfeed machines, and 50 are still in use of the original 150 in service. These handfeed machines have now been replaced by screwfeed machines equipped with 300, 400 and 500 rev./in. gears. Owing to the difficulties of maintaining air pressure in the mine, experiments are being made with electrically driven machines.

An important item in the development of diamond drilling was the underground test chamber in which air pressure, water pressure and drill performance were carefully checked. In the examination of drill bit performance a large number of matrix alloys in monel metal, manganese bronze, aluminium bronze, and tin bronze were tested. The metal has not been so well developed that the practice of collaring can be dispensed with. The drill bit is inspected at the surface daily, and greasing of the core barrel is recognized as important.

Means of facilitating coupling and uncoupling are sought. Taper threads instead of the usual cylindrical Acme thread would reduce about 8 turns to only 1¼. Diagrams showed that in spite of increasing costs the actual drilling costs could be reduced. It is intended to use BX bits for stoping. With reference to a previous paper the author commented that the tendency to lower speeds was obviously an anomaly and probably due to too small machines. The bottom pressure is most important.

BLAST HOLE DRILLING METHODS

The employment of exploration and blast hole drilling methods in Canada was described by Mr. R. L. Roscoe, with the paper based on the experience of Boyles Bros. Drilling Co. and other Canadian diamond drilling firms. Mr. Roscoe described the varied conditions encountered in Canada. Many parts of the country were inaccessible in summer and thus a resort must be made to winter drilling. In addition, the difficulties of transport necessitated the employment of small petrol driven drills, even at operations to a depth of 500 ft., although some larger drills for employment at depths reaching 2,500 ft. were in use. There was, however, a trend to drill deeper holes. The deepest hole last year reachd a depth of 5,800 ft.

The introduction of sintered carbide drills for blast holes caused a serious reduction in the use of diamond drills for holes under 50 ft. in length.

The speaker dealt also with steep rock drilling, foundation testing, oil well drilling, and equipment trends. Mud drilling needed new core barrel sizes and the hydraulic feed was growing increasingly popular as equipment.

Methods employed in diamond blast hole drilling at Mufulira, Northern Rhodesia, were described in a paper by Messrs. E. R. Gayfer and V. E. Peterson. The ore body of the mine, which lies within 10 miles of the Belgian Congo border, was first described in detail. At Mufulira, diamond blast hole drilling was developed in three stages. First, through preliminary trials from 1938 onwards; second, by continuously retreating stope face, 1947; and third, by the present diamond blast hole drilling practice. In the preliminary trials only stoping above the 460 ft. level through quartzite of varying strata was carried out. In 1939, EX drill bit production commenced in Mufulira, the method used being the technique of the Diamond Development Co., (Woodbridge House), which consisted of cold pressing and sintering followed by hot pressing.

From May 1940 to May 1941, 19,000 ft. of blast holes were drilled with 425 locally made crowns. Statistics showed that this embraced an average footage per crown of 44.4 ft. and 4.05 in. drilled per ct. lost, with an average footage of 30 ft. per machine shift. From August 1941 to October 1943, numerous types of crowns were the subject of experimentation, after an agreement with Boart Products Ltd. had been reached for the production and further development of diamond drill crowns.

No type of crown was found that gave good overall results. Statistics showed that crown life varied from 4.3 ft. to 150 ft. per crown with a rate of penetration of 1.75 to 3.9 in./min.

In the second stage work was carried out between 900 and 1,150 ft. levels. EX drill bits with 8 tungsten carbide impregnated slugs brazed in were used. There is no salvage with these crowns. The results were encouraging and the crown was well suited for African labour. The highest production rate was 44,000 ft. drilled in July, 1951, at 45.6 ft. per machine shift.

CURRENT METHODS

At the present time diamond drilling is done selectively with three different crowns. In arduous conditions, such as drilling down-holes in hard ground, collaring of all holes, drilling through bands of native copper or quartz crystals, and in broken or shattered ground the robust EX tungsten carbide impregnated crown is used, consisting of 8 V-type segments brazed into a straight wall crown. For medium conditions drilling of up-holes in homogeneous silicified rock including hard quartzites and some of the graywacke, a fast cutting EX coring crown is used with 8 to 9 ct. of grade II diamonds at 9 to 20 stones per carat. It is not used on down holes owing to the danger of wrecking when drilling over the core left in the hole. In easy conditions, for drilling both up and down holes in soft sandy argillite formations and in some of the graywacke and quartzites of the upper ore body, EX pencil coring crowns are used. They contain 19 to 20 ct. of mixed African boart at 7 to 15 stones per ct. Three tungsten carbide impregnated slugs are set in the inner diameter. These crowns give the best footage per machine shift as it is not necessary to pull core every 5 ft., and penetration rate is relatively fast. To maintain hole gauge a reaming shell is used with all crowns.

Trials were made with BX drills. These proved slightly more costly, but at present the balance is in favour of short blast holes. The footages per crown in the year July 1950 to June 1951 when 395,950 ft. of diamond blast holes were drilled, were: tungsten carbide impregnated crown 110.7 ft., pencil coring crown 84.6 ft., and standard coring crown 57.6 ft. The two last mentioned crowns lost one carat of diamond for 13.7 ft. and 18 ft. respectively.

DRILLING IN OTHER DOMINIONS

Mr. P. J. Kirkwood reported on his experiences of diamond drilling in Australia. When he arrived in Australia in 1936 steam plants were mainly used for driving drills, with very little maintenance of plant and equipment during the depression. Practically all machines were imported. Re-threading of drill tubes and bits resulted in deviations from standards. These conditions necessitated importing the latest type of machine from Canada as these had greater rotational speeds. Further, with the use of impregnated drill bits, the footage per shift could be increased, and in the following years very few of the conventional hand bits were used.

On the suggestion of the Australian Government during the war, the manufacture of drills and drilling equipment was started, in particular for the drilling of water holes. There was no call for very deep drilling at depths greater than 5,000 ft. Standardization of drilling equipment as indicated in the American Commercial Standard proved successful, but in Australia slight variations became necessary. For instance, it was necessary to increase the tolerances for the threads. As already suggested by Mr. R. L. Roscoe, in mud drilling special equipment becomes necessary, and the high labour costs in Australia encourage modernization of the plant. The author described the drilling of large well holes with wagon drills. In these operations a drill bit was still excellent after 3,000 ft. of drilling and the costs were extremely low, say 1d. per foot drilled.

R. M. Ferguson, who recently became Director of Boart Products Manufacturing Co., described the surface drilling for gold in the Orange Free State. On the average drilling rate is 500 to 600 ft. per month and rarely reaches 1,200 ft. The holes are deflected by using the well-known Hall-Row wedge, and standardization of core barrels is important. Bore holes reach down to 7,000 ft., with the average costs £2 per ft. In the field trip one of these boreholes at Peter Pan Park was visited in which, at the depth of 3,900 ft., sampling showed 11.1/16 dwt. gold for a length of 29 in. or 3.253 in.-dwt. This particular borehole was started on January 9 and the drill rotated at 400 r.p.m., figures which showed a rate of penetration of about 1,100 ft./month. The derrick allows a pull of 60 ft. of tube length, with the latter each of 10 ft. length. The drill is driven by a 98 h.p. caterpillar Diesel engine. Moving the drill and starting it again at another place takes seven days.

In his paper Mr. W. S. Garrett pointed out that diamond drilling on the Far West Rand was more difficult than in the Free State. Boreholes in the area are up to 6,000 ft. in depth, with the deepest reaching 10,600 ft. It was explained that in operations a string of 120 ft. length is pulled and lowered down to 6,000 ft. in 10 sec. At these velocities a frequent failure of the brake was observed and water cooled brakes were introduced as an improving factor. It was necessary to replace frequently the clamp jaw inserts. The problem of core recovery was discussed in detail.

Independent hydraulic (oil) feeds are essential for modern deep drills. The paper described the operation of the core barrel, as well as advancing a new explanation for the deviation of a diamond drill. In the opinion of the writer this could be prevented by the elimination of sideways cutting diamonds.

Cleaning Small Coal by Froth Flotation

By H. G. HAGUE, M.Inst. Fuel (Fraser & Chalmers Engineering Works)

Mechanization in the mines has been responsible for an increase both in the percentage of fines and in their ash content. It is thus necessary to clean the fines before they can be of commercial value. In this article, reproduced by courtesy of *The G.E.C. Journal*, the author describes the development of the process of froth flotation by which this very fine coal can be recovered.

The "Chance" sand flotation process has been successfully applied to cleaning raw coal down to 10 mesh size for many years, and before the advent of serious mechanization in the coal mines the fines minus 10 mesh were sufficiently clean to enable them to be mixed back with the larger cleaned sizes and still give a sufficiently low ash content in the mixture for market requirements. The minus 10 mesh was screened out of the raw coal on "Sherwen" vibrating screens before cleaning, and high screening efficiencies were obtained because the coal seldom exceeded 4 per cent moisture and could be screened dry.

Since mechanization, however, both the amount of fines and their percentage ash content have increased to such an extent that it is now necessary to clean them before they can be mixed back with the larger sizes, or be of commercial value as a separate product.

Mechanization has also accentuated the dust nuisance at the coal face and it has therefore been necessary to apply dust suppression methods to minimize the risk of pneumoconiosis among the miners. This has been achieved by water infusion and spraying, but it has so increased the moisture content of the fines that it is now impossible to screen them out of the raw coal without the aid of water.

To enable these conditions to be met and coal preparation plants to be built which are capable of cleaning the whole output from the collieries, it was necessary to develop some apparatus to clean the minus 10 mesh fractions. Accordingly, it was decided in conjunction with the Research Laboratories at Wembley, to experiment with froth flotation because this process had already been successfully applied to metalliferous separations and to the cleaning of very fine coal below 30 mesh in size.

FROTH FLOTATION PROCESS

Small laboratory circulator cells, already available in the Flotation Laboratory at Wembley, were used for these experiments, but it was soon realized that with the existing known methods the size range was too great to obtain satisfactory results and a careful study of the problem ensued.

Briefly, the principle of so-called froth flotation consists of separating particles of differing surface characteristics rather than of differing specific gravities. This is achieved by floating to the surface particles that readily adhere to bubbles artificially created in an aqueous medium.

Cresol, a by-product of coal, is an excellent reagent for producing a mass of large durable bubbles if mixed in a ratio of about 1 to 3 lb. per 2,240 gallons of water.

All substances, solids and liquids, possess surface characteristics which act mutually upon one another and it is fortunate that in the case of raw coal the particles of clean coal more readily adhere to the bubbles than do the dirt or shale particles, and separations are therefore possible due to the greater flotability of the coal.

In theory, therefore, bubbles produced in the bottom of a vessel containing water and raw coal would rise rapidly to the surface and carry with them the particles of clean coal, leaving the shale particles at the bottom, but as the particles vary in weight, both due to size and specific gravity, and as the bubbles have a limited carrying capacity, the size of the particles that can be treated is limited.

As an example, a small particle of shale of high specific gravity may weigh less than a larger particle of coal of a lower specific gravity; but a bubble sufficiently large to carry the particle of coal to the surface of the water may also carry the particle of shale due to its lower weight.

When fine raw coal of below 30 mesh in size is being treated, this feature does not affect the separating efficiency to any large extent, but even so some very small shales are carried to the surface with the coal and some of the larger particles of coal remain at the bottom with the shales.

The tests carried out at Wembley in small circulator cells using cresol as a frother reagent gave encouraging results on sizes up to 10 mesh, and led to the installation of a froth flotation pilot plant at a South Wales colliery, where experiments could be carried out continuously and on a larger scale.

THE RESULTS

Results from this plant immediately showed that, to obtain separating efficiencies on sizes below 10 mesh equivalent to those being obtained on sizes below 30 mesh, some means had to be found either for decreasing the flotability of the shale or increasing the flotability of the coal, and conditioning equipment was therefore added to the pilot plant.

A wetting reagent was first tried to decrease the flotability of the shales but, while this was successful to some degree, it did not exactly solve the problem and was also costly due to the excessive quantity of wetting reagent required. The alternative treatment was then applied by admitting a reagent to increase the flotability of the coal and this was found to be much more satisfactory.

CREOSOTE AS A REAGENT

Creosote, another by-product of coal, was eventually found to be a suitable reagent when mixed in a ratio of about 1 to 2 lb. to 2,240 gallons of water. The creosote appears to form a very thin film around each of the coal particles, thus making them more readily attractive to the bubbles and more flotable. The shale particles, on the other hand, appear to be relatively unaffected by the creosote and in consequence are not readily floated.

While it was difficult to ascertain accurately the length of time required thoroughly to condition the coal, experiments proved that one minute was sufficient, and that no improvement was obtained in the flotation results when longer conditioning was allowed; the conditioning equipment was therefore designed on this basis.

Numerous tests were run on the pilot plant using creosote as a conditioning reagent and cresol as a frother reagent on various types of raw coal, and excellent results were obtained on sizes up to 10 mesh.

The ash content of the clean coal from the successive cells gradually increased as the size of the product decreased, this being due, as explained previously, to the variation in size and specific gravity of the particles. The final loss of the larger particles of clean coal in the shales is, however, negligible, as will be seen by the high ash content of the plus 14 mesh shale.

PLANT EMBODYING FROTH FLOTATION

To enable the reader to follow the process a brief description of a coal cleaning plant is given below. In a plant for cleaning 350 tons an hour of run-of-mine coal, the whole colliery output is first screened at 8 in. or 10 in., the oversize from these screens being reduced to 8 in. or 10 in. by pick breakers. The coal, including the broken coal, is then passed over a battery of screens fitted with plates of various sized apertures culminating in meshes of 10 B.S.S. Water sprays are fitted to these screens to remove the fines adhering to the larger coal and also to assist in screening at 10 mesh on account of the coal being wet.

The plus 10 mesh coal passes directly to the Chance sand flotation cleaner where it is cleaned, sized and loaded to wagons in the usual manner, while the minus 10 mesh passes with the spray water into a cistern situated below the screens.

As a water/coal ratio of approximately 10 to 1 forms an ideal pulp for froth flotation, the screen spray water is regulated to this amount, but it is interesting to note that efficient screening can be obtained on wet coal at 10 B.S.S. on Sherwen screens with a water-solids ratio as low as 2½ to 1.

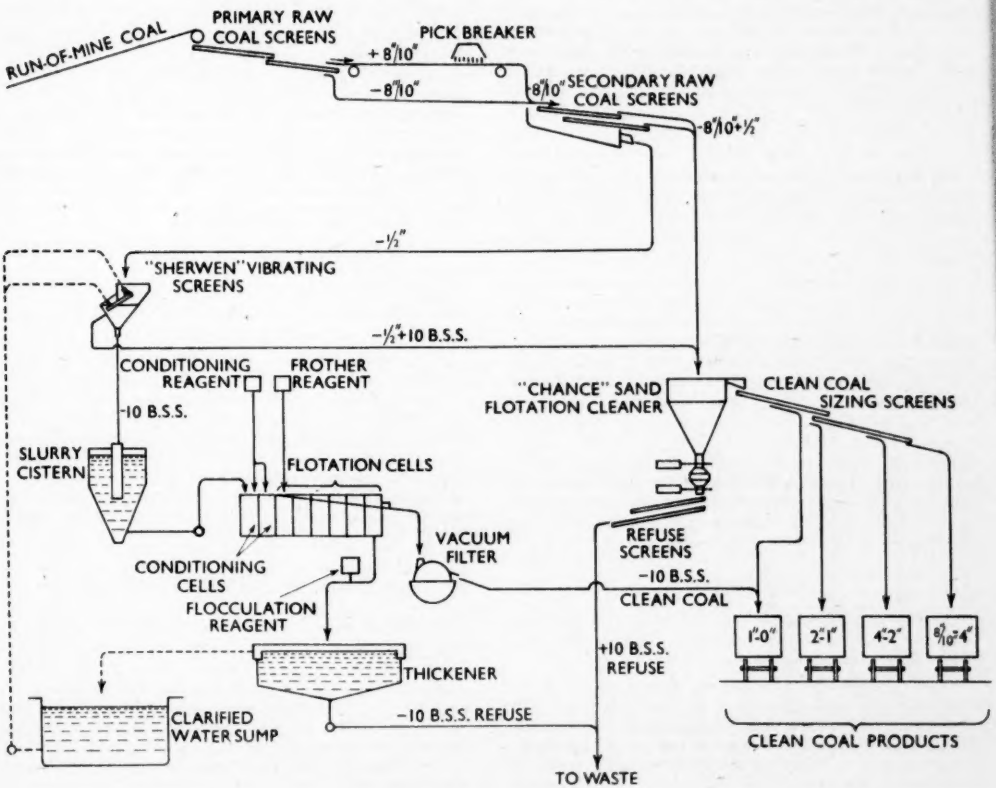
FROTH FLOTATION PLANT

From the cistern the coal and water pulp is pumped to the froth flotation plant. The froth flotation machine consists of a bank of cells in series, each cell having a 39 in. square agitation box, which are usually arranged in groups of eight, two for conditioning and six for frothing.

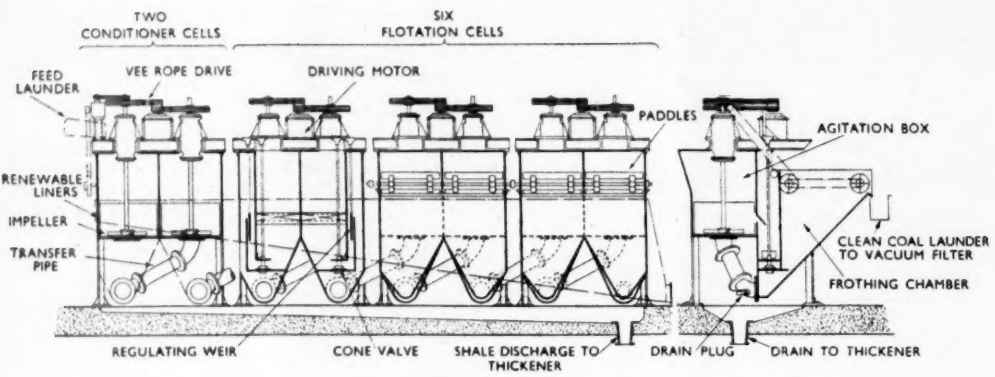
Each agitation box has its own cruciform impeller running at about 270 r.p.m., driven in pairs by one vertical spindle 15 h.p. motor. Wearing plates are fitted in the bottom of each agitation box immediately below the impeller.

Frothing chambers are mounted in front of each agitation box into which the bubbles rise and whilst these frothing chambers are not actually necessary on the conditioning cells, they do allow of flexibility should it be found that more frothing than conditioning capacity is required, and vice-versa.

The coal and water pulp, to which is added the requisite amount of conditioning reagent, is fed to the first conditioning cell where it is thoroughly agitated and then passed to the second for further treatment if necessary.



Coal Preparation Plant



Froth Floatation Plant

From this cell the conditioned pulp is fed into the first flotation cell agitation box where the requisite amount of frothing reagent is added. The air entrained by the agitator creates bubbles which can only escape with the pulp into the frothing chamber, and it is in this chamber that the first stage of separating the coal from the shale begins.

The cleanest particles of coal are immediately attached to the bubbles and are carried to the surface of the chamber where they are scooped off into the clean coal launder by slow moving paddles. The shales, and the coal which is less readily flotable, sink in this chamber and either pass over the side weir or through the cone valve into a lower compartment from where they are drawn into the next cell for further treatment. Additional frothing reagent can be added to this cell to increase the flotability of the remaining coal particles and thereby float them to the surface of the frothing chamber attached to this unit.

The residue from this chamber passes to the next agitation box and so on throughout the series until it reaches the last cell where practically the whole of the coal has been recovered and only the pure shale is left to be discharged from the bottom of the last frothing chamber.

The clean coal, together with the froth, is collected in a launder mounted in front of the frothing chambers from where it gravitates to a rotary vacuum filter for recovery. Briefly the vacuum filter comprises a revolving drum fitted with a fine woven mesh cloth on to which the coal and froth are delivered, and, as the term implies, a vacuum is created inside the drum by a pump which breaks down the bubbles and draws the water into the drum, leaving the de-watered coal to be ploughed off the drum with a knife-edged blade. Assistance is given to the discharging of the coal by supplying air at pressure at the point where the blade is fixed to the filter. The water from the broken-down froth is collected from the centre of the drum and returned to the system for further use.

THICKENING

The shales, with practically all the water that has been used in the froth flotation machine, are delivered to a thickener for recovering the solids from the water.

These thickeners are usually large shallow circular tanks with a bottom sloping to the centre and are fitted with slow moving rakes to scrape the settled solids to a central discharge in the bottom. From the bottom of this thickener it is usual to pump the shales to waste by means of a diaphragm type pump. The water rising to the overflow of the thickener passes over a weir into a water sump from where it is pumped back to the plant to be used again.

To assist in the settling of the very fine shales in the thickener and to obtain a solid-free water for re-use, flocculating reagents are added to the shales and water entering the thickener so as to coagulate the solids and give them a higher settling rate. Provided there is not an excessive quantity of soluble clay in the shales, gin clear water can be recovered by using starch reagents.

While froth flotation of small coal is of necessity a costly process, due chiefly to the consumption of conditioning, frothing and flocculating reagents, it does enable a commercial product to be obtained which without some form of treatment would be a waste product. The approximate cost to clean coal by this method, including capital depreciation, is in the neighbourhood of four to five shillings per ton, and it will readily be seen that with the present-day cost of coal, tremendous savings are achieved.

CONCLUSION

The development of the froth flotation process to clean small coal efficiently up to 10 mesh size, has enabled Fraser & Chalmers to produce a two-process coal preparation plant capable of mechanically cleaning the whole run-of-mine output from the collieries.

It is believed that this has made it possible to obtain a higher yield of clean coal at a given ash content than any other process yet developed and at a lower operating cost per ton of raw coal treated. In the future, after sufficient plants have been installed, it should enable consumers to obtain a much better quality fuel than is now available and in consequence become of great value in the national economy in view of the importance, at the present time, of making the best use of all the coal mined.

Beach Sand Mining

Production of zircon and rutile continues to increase in importance along the 150 miles of New South Wales and Queensland coastline. Value of the annual production now approximates £A.500,000 per year. Four companies are operating in Queensland alone and it is stated that both plants and production are to be increased. A late development is an application for a prospecting authority over 20 sq. miles on North Stradbroke Island, off the Queensland coast, which is regarded as one of the world's largest low grade zircon-rutile deposits.

The Third Mechanical Handling Exhibition and Convention

The Third Mechanical Handling Exhibition and Convention will be held at Olympia from June 4 to June 14, and has attracted a considerable number of exhibitors who will display a comprehensive cross-section of British mechanical handling equipment.

The third Mechanical Handling Exhibition and Convention will be held at Olympia from June 4 to June 14. The exhibits of nearly 200 firms, which occupy 250,000 sq. ft., will include among other units conveyors, hoists, cranes, mechanical loaders and shovels, coal handling plants, wagon tipplers and ancillary equipment.

The organizers of the exhibition note that materials handling is now closely related to all manufacturing functions, with its specific problems often solved by utilization of the right type of equipment. It is stated that in the production of an article, nearly 80 per cent of the price is represented by handling costs. The organizers maintain that this overhead can be reduced by use of the correct handling equipment; hence every trade needs the modern materials handling equipment which can thus prove an exceedingly effective and profitable factor.

Mr. Peter Thorneycroft, President of the Board of Trade, pointed out recently that the scope of the exhibition may be judged from the active support granted it by the Trade Associations concerned with crane making, aerial ropeways, foundry trades and truck manufacture, in addition to the Mechanical Handling Engineers' Association. He added that carefully designed mechanical devices increase output, reduce fatigue, improve production methods and cut overhead costs.

Criticism of present day materials handling equipment was forthcoming recently from America. The remarks of Mr. H. E. Conrad, executive secretary of the American Society of Tool Engineers, in his announcement of an industry survey, showed that current materials handling equipment was considered too specialized to meet the expanding production economy of the United States. Statistics compiled during the survey showed the need for more versatile plant, and the speaker added that when suppliers and purchasers of materials handling equipment met together, the opportunity was presented for an exchange of those notes which might accelerate the development of equipment which would more nearly fulfil the immediate needs of industry.

The Olympia Exhibition is thus of great importance, the scope of which may be considered of a standing beyond the merely national sphere. The following are notes of the more successful exhibitors.

At Stand J 4 in the National Hall, the *Birtley Co. Ltd.*, is exhibiting a photographic display of earth moving equipment and materials handling plants for coke and coal. The display of earth moving equipment is operating with caterpillar tractors and materials handling plants at steelworks, coking plants and power stations. There will be in addition a cinematograph show of earth moving equipment.

A display of Sherwen electro-magnetically operated vibratory conveying equipment will represent the display of the *Fraser and Chalmers Engineering Works of the General Electric Co. Ltd.* The centre feature of the stand will be a circular, electro-magnetically operated vibrating trough, which has been made up into a screening unit. This equipment separates a mixture of granules into three groups by size, with each group differently coloured for the purpose of easy identification in the demonstration. The granules are fed to a spiral elevator by further vibratory conveyors arranged as spokes to the hub formed by the elevator, which then raises the material and from the top of the spiral it is finally returned for recirculation. A further interesting application of the spiral elevator in industry is demonstrated by a unit delivering material to an automatic weighing machine. Further equipments on the Company's stand will demonstrate a novel system of reversing the flow of a material by electro-magnetic means in conjunction with half wave rectifiers, a recently developed, straight, reversible conveyor capable of handling material in either direction with an output comparable to that of an equal sized standard vibratory conveyor, and other new and standard equipments. The display will be on show at Stand B 16 in the Grand Hall.

In the National Hall, *Hugh Wood & Co. Ltd.* will exhibit a display of belt conveyors on Stand H 1. The industrial drive heads manufactured by the firm range from 5 h.p. to 50 h.p., and sizes from 5 h.p. to 30 h.p. are made in similar construction, comprising a self contained head with all the driving mechanism arranged on a common bedplate. The firm is exhibiting industrial drive heads type 5N and 25W with motor, a 5GB/60 drive head with motor, a pulling jack tail end, 24 in. belt, 3 ft. TU; a screw type tail end 3 SS 2 ft. TU; a standard 3 FT section with idlers of 4 ft. 6 in. pitch; a 3 MFT standard section with idlers of 4 ft. 6 in. pitch; as well as other standard sections complete with ancillary equipment.

On the stand of the *British Electrical Development Association*, F 15 in the Grand Hall, attention is drawn to the use of the light-sensitive cell, commonly known as the "Magic Eye," in connection with handling, control, and instrumentation in industry. The field of electricity as applied to mechanical handling is so vast that the Association has stressed a single aspect only in the space available. The comparatively simple construction and simple installation of this electronic aid to industry is demonstrated by a mock-up conveyor system which illustrates the use of various types of equipment for sorting products according to their size or colour, and for counting singly or in batches. The display is supported by data in the form of wall panels which present relative information to the practical applications of the unit.

On Stands D 8/9 in the Grand Hall, the *English Electric Company Ltd.* is exhibiting electric and fractional horse power motors. The Company presents electric motors for mechanical handling duties, the most notable being a range of L Y totally enclosed fan cooled squirrel-cage motors which provide a range having preferred outputs and standard dimensions. The motors comply with Draft British Standard CON (ELE) 6814. These motors have outputs of up to and including 20 h.p. 4-pole, 15 h.p. 6-pole and in gradings, and are suitable for the driving of conveyors, stackers, loaders and pumps of varied types. They are particularly claimed as applicable to dusty and dirty conditions. At the exhibition, a cut away model will display the constructional features. Also on view is a K K S type industrial totally enclosed motor designed for heavy crane duty, and a range of standard F H P motors.

British Ropes Ltd., showing in the Grand Hall on Stand F 13, are exhibiting wire, nylon and hemp rope, as well as swaged terminals, control cables, rope slings, canvas, wire and bright steel bars with, in addition, steel wire ropes for mines, elevators, cranes, hoists, and all types of contractors' plant and excavating machinery. Also on view at the stand are "Blue Strand" preformed steel wire ropes, and "Viking" nylon ropes and slings, sisal transmission ropes, and square plaited driving ropes. To conclude its exhibition, the Company plans to display packing cords, canvas tarpaulins, braided slings and "Paraflex" crane ropes.

Conveyor belting, transmission belting, and industrial hose are to be shown on the stand of *The Goodyear Tyre and Rubber Co. (Great Britain) Ltd.* The prominent features are Goodyear conveyor and elevator belting supported by a display feature which serves to demonstrate how quality control is applied during manufacture to ensure a consistently high standard of product. A roll of coal flow conveyor belting is shown with a selection from the Company's range, each carry-

ing a load which typifies its special uses. The stand is No. A 4 in the Grand Hall.

Tecalemit Ltd. is exhibiting a full range of lubricating equipment for mechanical handling and industrial machinery, automatic, semi-automatic and manually operated, for use with oil or grease. A number of these are working exhibits to demonstrate the operational factors of the different systems, and to illustrate which particular unit is best suited to a given application. In addition, the Tecalemit industrial loading table is shown, which is presented as greatly facilitating the raising and lowering of heavy equipment, loading trolleys, and the feeding of material to presses and similar applications. Also on the Company's Stand H 6, National Hall, is the Tecalemeter for the accurate measurement of liquids, either pre-set quantities or for continuous flow, which will measure accurately liquids up to the viscosity of creosote oil or sugar syrup. The display is concluded by a working exhibit of a pre-set Tecalemeter.

Conveyor driving heads and idlers are displayed on Stand B 18b in the Grand Hall by *Richard Sutcliffe, Ltd.* The central feature of the stand is the impact idler testing machine which shows the use of impact idlers compared with steel shell idlers. The belt conveyor driving heads are the Goliath Mark VI fitted with a fluid coupling and break, and a Tigress fitted with a fluid coupling.

On Stand B 19 in the Grand Hall, *Ransomes and Rapier Ltd.* are exhibiting Rapier fork lift trucks both petrol and Diesel, as well as the Rapier shop truck crane, petrol-electric, with separate electric motors for hoist, derrick, slew and travel and the Rapier 5 Super mobile crane with petrol, electric or diesel electric drive. This crane is available with either short or long jib extensions. Models of the complete Rapier range of mobile cranes are also to be shown, and a scale model of the largest walking dragline in the world, the Rapier W 1400 can also be seen on this stand.

Thomas Smith (Rodley) Ltd. are exhibiting their 5 ton Diesel locomotive crane on Stand K 1 in the National Hall. The crane is self contained and can operate anywhere for long periods with the minimum amount of attention being required. The Diesel power unit and machinery are embodied in the superstructure, which is fully revolving on a live ring of tapered rollers. Power is smoothly transmitted from the Diesel to all motions through a hydraulic coupling and chain drive. The crane complies with the BSI specification and is fitted with all modern and efficient safety devices.

On Stand B 22 in the Grand Hall is the display of the *Metropolitan-Vickers Electrical Co. Ltd.* The main Metrovick exhibits are the new type KNB tefc squirrel-cage motor with standardized fixing dimensions to the American NEMA specification. In addition there will be on show at the Company's stand the new type MDX steelworks auxiliary motor which conforms to the AISE 600 series. A further exhibit will be an AC Perigrip brake demonstration unit. A 250 h.p.975 r.p.m. tefc motor type RW, together with a contactor cubicle and remote control pedestal is arranged as a working exhibit for operation by visitors. Other items include a drum controller, limit switches and motor starters. Metrovick stable AC creep hoist control equipment using thrustors, is demonstrated by the Wharton Crane and Hoist Co. Ltd. on Stand E3. This arrangement, which is known as the Stacreep system, provides a creeping speed on load, a factor which thus eliminates inching.

The British Tyre & Rubber Co., Ltd., are exhibiting conveyor and elevator belting, examples of industrial hose used in mechanical handling, transmission belting and industrial "V" belts, on Stand J 3 in the National Hall.

B.T.R. conveyor belts are exhibited under their two main categories, namely, surface and underground. The wide variety of surface applications catered for by the belts on display ranges from such light work as handling boxes, bales, sacks and papers, to the conveying under severe conditions of tension and flexing the heaviest and most abrasive loads, such as heavy ores and large jagged hard rock. The natural unloaded troughing qualities of B.T.R. belts are demonstrated on the stand and the construction of each belt is displayed for inspection.

For severe conditions of wear and abrasion there are displayed B.T.R. "Long-life" belts in their various gradings and sizes for handling such loads as ores, coal, rock quenched coke, cement, sand, gravel, sinter, bricks, broken glass, and, since these belts are acid resisting, phosphates and other fertilizers in their various stages of manufacture. For exceptionally severe conditions of tension and flexing, as well as wear and abrasion, B.T.R. "Super Long-life" belts are recommended. They are used for handling such materials as coal, flint, sinter, and the heaviest ores and rock.

The answer to the problem of handling hot materials may be found in the special display of "Super Long-life" belts for hot materials. Loads handled on these belts include ashes, warm castings, sinter, hot and quenched coke, hot bricks, and corrosive materials such as hot superphosphates. The wide field of mechanical handling, where conditions can be described as average, is well catered for. For non-abrasive loads such as soft coal clay, earth, ashes, slaked lime, the B.T.R. "Consort" belts are recommended, and for still lighter conditions, B.T.R. "Conway."

The B.T.R. "Pitmaster" brand of conveyor belts recently introduced for underground work is exhibited on the stand. Every feature of advantage to underground work is embodied in the belts, and for exceptionally heavy colliery work, where severe conditions of tension and flexing exist as well as wear and abrasion, there is the "Super-Pitmaster." Its strength and durability backed by the Tylock splice are encouraging ever-increasing distances between centres on main trunk conveyors and make it a match not only for the 150 h.p. drive heads driving it in British collieries to-day, but for the drive heads of 200 h.p. and over, now being developed. For less arduous but still severe conditions there is the B.T.R. "Pitmaster" and there is a complete B.T.R. Pitmaster range for face and gate conveyors.

At Stand E.1A in the Grand Hall, the exhibits by *The British Thomson-Houston* Co. include a wide range of electric equipment for incorporation in all kinds of mechanical handling equipment. Other interesting demonstrations and displays show typical ways of increasing productivity and improving production methods by the adoption of electrically-operated devices and electronic control.

A working demonstration of Stacreep crane and hoist control is a feature of the stand. There are a number of industrial electric motors exhibited including stator and rotor units for building-in, and fractional horsepower motors. Exhibits of electric control gear include contactor starters, controllers, pressure switches, push-button switches, limit switches and the like.

The electric equipment for the Rapier Type W1400 walking dragline was manufactured by B.T.H. and includes some 3,000 h.p. of electric motors and a complete Ward-Leonard power control scheme.

Exhibits in the range of industrial electric drives include a number of squirrel-cage and slip-ring induction motors, several of the squirrel-cage machines having die-cast frame and end-shields.

On Stand H.3 the general rubber goods division of the *Dunlop Rubber Co. Ltd.* will show a section in motion of a conveyor unit as used in mines, fitted with a flame-proof polyvinyl chloride belt, equipment which makes a considerable contribution to safety in the mines. This belting is particularly suitable for handling foodstuffs because it is easily cleaned and will not contaminate food.

The Company will show in addition a water jib hose for the first time. This type of hose is now being used by the railways, instead of riveted leather hose, for carrying water to the tender of a railway engine. In cold weather a leather hose tends to freeze solid and collapse completely to such an extent when not in use, that a brazier has often to be kept near it in the winter months. On the other hand, when the rubber hose is not in action it retains its normal shape and there is no freezing problem. Included as illustration of the use of the hose is a miniature rail tank waggon for corrosive liquids. The waggon has a cut-away section to show the rubber lining protecting the steel container.

METALS, MINERALS AND ALLOYS

Mr. Larson, Administrator of G.S.A. and D.M.P.A., foresees a general easing in the supply position of many metals. He said that although there are still a number of serious gaps he believed that by the time government assisted production is in full swing, all defence needs for most of the principal metals and minerals could be met and that it would be possible to free substantially greater amounts for civilian requirements as well.

He gave the following details of the pre-Korean consumption, the maximum annual additional production that will come from government-assisted schemes and the total extra tonnage to be derived in the period 1951-56.

	Maximum Annual Additional Production	*Additional Tonnage for Period 1951-56*	*Pre-Korean Consumption*
	s.tons	*s.tons*	*s.tons*
Copper	165,200 (1956)	400,000	2,000,000
Chrome ore	N/A	900,000*	950,000
Cobalt	2,563 (1954)	11,156	5,000
Lead	50,000 (1955)	194,600	1,250,000
Manganese ore	247,000† (1953)	1,070,000†	1,850,000†
Titanium	4,150 (1954)	19,150	140
Tungsten	N/A	N/A	6,250
Zinc	214,500 (1954)	856,600	1,100,000

*Period 1952-56. †Long tons.

Lead, zinc and cadmium are to be decontrolled in Canada immediately. This brings Canada into line with the U.S. In announcing this relaxation, the Canadian Production Minister said that steel, nickel, copper, tungsten, cobalt and aluminium would still remain controlled.

COPPER.—The cessation of shipments of copper from Chile has hit the U.S. very hard. President Truman has authorized the withdrawal of 22,000 tons of copper from the stockpile to make good this loss and the lower production resulting from the strike at the Anaconda mines. This is the third occasion on which copper has been withdrawn from the stockpile; the previous occasions were in August and September, 1951. The amounts then withdrawn were 25,000 tons and 30,000 tons respectively. It is hoped that the importation of copper from Chile and other foreign sources will avoid the necessity of taking the whole amount now authorized.

An increase in the price of copper is likely to follow the decision of the U.S. Government to allow copper users a greater freedom in making overseas purchases of copper. Hitherto the fabricators have been free to purchase any available copper at unspecified prices, but fabricators have had to absorb any cost above the 27½c. per lb. level. The practical effect was the imposition of a ceiling price. Now fabricators will be able to recoup themselves for 80 per cent of the extra cost over 27½c. per lb. by Government adjustment to the price of copper products. This regulation compelling the mills to bear the remaining 20 per cent will have a very powerful restraining influence on the metal price. Indeed, it might be assumed that a premium over 27½c. per lb. will only be paid in order to stop mills from closing down.

The M.P.A. have put forward a plan to revise domestic copper allocations so that the increase in copper prices would be spread equally among all consumers. This plan has been opposed by the primary producers and custom smelters on the grounds that the big domestic producers would in effect have to sell as much as two-fifths of the copper, which they produce and could process themselves, to competing fabricators, if all were to get the same proportion of low cost domestic copper envisaged in the M.P.A. plan. As an alternative, the producers are urging that all price controls on copper and copper scrap should be removed.

As a result of the relaxation of the price of copper products, and hence the price which manufacturers in the U.S. can pay for the metal, all foreign copper offerings to the U.S. have been temporarily withdrawn. The Central Bank of Chile, which is handling Chilean exports for the next three months has made no decision yet concerning the price at which it will sell. Part of this hesitation must be ascribed to a desire to test the extent to which Europeans will buy in a free market. The Chileans have been boasting that they could sell the whole of their copper output to Europe; this claim is now being put to the test. The Fiat motor works in Turin have told the Chilean Government that it would be interested in buying 30,000 tons of copper annually, but the price which Fiat would be willing to give is not reported.

LEAD.—As a consequence of N.P.A. having lifted the controls on the use of lead and on the amount of the metal which can be held in stocks, trading in lead futures in New York is once again possible. When the market re-opened at the beginning of the week, the price for July futures was 13.70-14.35c. per lb., but the quotation narrowed to 13.80-14.25c. per lb. The spot price was 14.85c. per lb.

Demand for lead in the U.K. is reported to be still slack. Last week's slight adjustment was not sufficient to induce prospective buyers to change their minds.

A report from Washington suggests that the D.M.P.A. may have obtained authority from the D.P.A. to buy 30,000 tons of lead as a stockpile for industry, to provide an insurance against price increases later in the year should demand revive. The report suggests that D.M.P.A. will be authorized to hold this lead until January 1 next and if by that time the market is still easy it will then be required to sell the 30,000 tons to the strategic stockpile.

TIN.—Reports from New York state that two of the large Bolivian tin producers Aramayo and Hochschild, and the small producers have decided to sell their accumulation of tin concentrates to R.F.C. at a price of $1.18 per lb. f.o.b. As the medium producers are believed to have agreed to sell their accumulations, most of the surplus will move towards New York. Patiño is reported to have stood aside from these arrangements because his concentrates have been coming to the U.K. Certainly, imports from Bolivia have been heavy recently, as noted in this column last week.

The Malayan tin ore output in April is reported at 4,669 tons making a total for the year to date of 18,573 tons compared with 18,523 for the first four months of 1951.

Indonesian tin ore shipments during April rose steeply to 3,296 tons making a total for the first four months of 9,559 tons compared with 10,088 tons in the corresponding period of 1951.

ALUMINIUM.—The Munitions Board is reported to again be substantially increasing its aluminium stockpiling target and the currently planned aluminium capacity of 1,500,000 tons annually is now considered insufficient in government circles. If this is in fact so, it will remain to be seen whether increased requirements will be obtained through a further increase of domestic production capacity or whether Canada will be asked to increase her shipments to the U.S.

The president of the Aluminum Co. of America is confident that the industry can sell all the aluminium that it is planned to produce. He suggested that the industry might have to expand even more, though he did not want to see expansion of this sort being undertaken too rapidly. He also made the point that at least one new producer should be brought into the industry, but this would need out and out subsidy from the Government.

QUICKSILVER.—The price of quicksilver has been gradually falling during a period of over six months. It has now subsided a further $2 to $198-$200 per flask.

TITANIUM.—The production of titanium in the U.S. is receiving a great fillip. In a few weeks National Lead's Henderson Nevada plant will have increased its present production of one ton per day several times. The president of the company hopes to reach ten tons a day by the end of the year.

TUNGSTEN.—A report from Montreal says that the Emerald Mine, south of Nelson, British Columbia, has expanded production and that it is now the world's largest producer of tungsten.

The London Metal Market

(From Our Metal Exchange Correspondent)

The week has seen a very much firmer undertone to the market than of late, and also a widening of the backwardation. There has been a steady demand from the Continent for Straits tin already afloat to Europe, and this combined with slightly better consumer demand has resulted in buyers being more eager than for some time past. The increase in the backwardation was not unexpected and is liable to continue until the relative level between London and Singapore is such as to enable dealers to buy tin in the East and deliver on the London Metal Exchange.

In America a contract has been fixed for Bolivian ore which has been lying at the ports of shipment for some time, and which has been financed by Banks and this should help the raw material situation of the smelter but it must not be assumed that the establishment of a long term contract has been made any easier. There have been further signs that the Administration are considering handing back trading to private enterprise.

The prices of other metals have shown little change but there is again talk of a further reduction in the U.S. lead price and the long expected reduction in the zinc price is now awaited daily.

During the week H.M. Government stated that in future they would keep their selling prices of metals in line with the American quotations plus a differential for freight, etc., and added the misleading statement that this would put U.K. manufacturers on a par with their foreign competitors. This statement is not in accordance with the facts as our chief competitors are European, and the prices which they have to pay for their raw materials are very much below the American parities, *e.g.*, lead can be purchased at £110 per ton, and zinc at around £135 per ton.

On Thursday the official close on the tin market was: Settlement price £972, Cash Buyers £971, Sellers £972; Three months' Buyers £962, Sellers £963. In the afternoon the market was firm. Turnover for the day was 90 tons. Approximate turnover for the week was 430 tons.

The Eastern price on Thursday morning was equivalent to £978 5s. per ton, c.i.f. Europe.

Iron and Steel

Since the beginning of the year the performance of the iron and steel industry has fallen short of expectations. Ingot production has been restricted by the shrinkage in scrap supplies, and in turn the rolling mills have only been working a reduced number of weekly shifts. Happily a more hopeful outlook is developing. A new blast furnace with a capacity of 3,500-4,000 tons a week has just come into operation at Cargo Fleet on the north-east coast and two more of similar capacity will also be started in the next few weeks. Their additional output of pig iron will assist materially in making good the deficiency in the supply of scrap and give a welcome impetus to the activity of the steel plants.

In other directions more favourable conditions are developing. Fuel stocks are increasing. April imports of foreign ore were the highest for any month this year and total receipts in the first four months of 1952 have exceeded those in the corresponding period of last year by over 650,000 tons.

Of course there is still a very wide gap between the demand for steel and the maximum tonnages available for distribution. Large scale importations are necessary to keep the wheels of industry revolving and here again the position is a little easier. No final settlement of the U.S. dispute has yet been reached but bigger shipments of American steel are coming to hand and there has also been a substantial increase in the deliveries of steel from Belgium and other sources in Western Europe. A large proportion of the material from European sources consists of steel semis which are urgently required for re-rolling purposes.

On the whole, therefore, it would appear that the steel famine may become less acute in the second half of the year. Larger tonnages are being earmarked for re-armament but direct exports of steel are on a reduced scale, and it may be possible to increase the allocations to home consumers in the third Period. It is hoped that there may be more explicit information on this point after Whitsuntide.

MAY 29 PRICES

COPPER

Electrolytic	£231 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid	£129 0 0 d/d
Soft empire	£129 0 0 d/d
English lead	£130 10 0 nom.

ZINC

G.O.B. spelter, foreign, duty paid ...	£166 0 0 d/d
G.O.B. spelter, domestic...	£166 0 0 d/d
Electrolytic and refined zinc	£170 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£270 per ton
Crude (70%)	£240 per ton
Ore (60% basis)	32s. 6d. nom. per unit, c.i.f.

NICKEL

99.5% (home trade)	£454 per ton

OTHER METALS

Aluminium, £154 per ton.
Bismuth, 21s. lb.
Cadmium, 18s. 3d. lb.
Chromium, 6s. 5d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £65 oz. nom.
Magnesium, 2s. 10½d. lb.
Osmiridium, £35 oz. nom.
Osmium, £70 oz. nom.
Palladium, £8 10s. oz.
Platinum (scrap), £33.
Platinum, £27/33 5s. nom.
Rhodium, £45 oz.
Ruthenium, £30 oz.
Quicksilver, £73 ex-warehouse.
Selenium, 25s. nom. per lb.
Silver (bar), 73¼d. f.oz. spot and forward.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth	50% 10s. lb. c.i.f. 40% 9s. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 per ton c.i.f.
,, ,, (concentrates)	£13 per ton c.i.f.
,, ,, Refractory	£12 12s. per ton c.i.f.
Baluchistan Metallurgical ...	£14 16s. per ton c.i.f.
Magnesite, ground calcined ...	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Molybdenite (85% basis) ...	103s. 1½d. per unit c.i.f.
Wolfram (65%), U.K. ...	485s. nom. c.i.f.
Tungsten Metal Powder (for steel manufacture) ...	35s. nom. per lb. (home)
Ferro-tungsten	33s. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 3s. 9d. d/d per ton
Ferro-manganese, home ...	£43 15s. 2d. per ton
Brass Wire	2s. 8¼d. per lb. basis.
Brass Tubes, solid drawn ...	2s. 1½d. per lb. basis.

U.K. METAL & MINERAL IMPORTS — APR.

	Units	*Apr. 1952*	*Jan.-Apr. 1951*	*Jan.-Apr. 1952*	*Increase or decrease in 1952 over 1951*
Non-ferrous metals and manufactures:					
Aluminium and alloys...	Cwt.	521,822	748,140	1,403,099	+654,959
Bismuth*	Lb.	13,498	181,826	170,390	− 11,436
Cadmium	Lb.	130,464	419,800	653,104	+233,304
Cobalt and alloys.....	Lb.	180,351	1,281,042	990,292	−290,750
Copper:					
Electrolytic	Tons	20,067	83,249	70,899	− 12,350
Other.....	Tons	15,104	46,779	55,106	+ 8,327
Lead	Tons	10,617	25,955	74,514	+ 48,559
Mercury	Lb.	100,086	608,104	336,611	−271,493
Nickel	Cwt.	11,079	31,501	38,905	+ 7,404
Tin.....	Tons	189	1,637	2,180	+ 543
Zinc	Tons	19,805	33,294	69,865	+ 36,571
Ores and concentrates:					
Antimony ore and conc.	Tons	2,627	7,776	10,033	+ 2,257
Bauxite	Tons	28,638	101,214	93,792	− 7,422
Chromium ore.....	Tons	14,565	45,790	63,734	+ 17,844
Iron pyrites†.....	Tons	50,672	70,084	119,726	+ 49,642
Manganese ore.....	Tons	30,557	124,996	156,671	+ 31,675
Molybdenum ore.....	Cwt.	11,030	15,728	29,604	+ 13,876
Nickel ore, conc. & matte	Tons	4,701	12,755	10,946	− 1,809
Tin ore and conc.....	Tons	3,781	11,933	17,203	+ 5,270
Titanium:					
Ilmenite	Tons	4,196	34,784	36,927	+ 2,143
Other sorts	Tons	754	2,276	3,176	+ 900
Tungsten ore	Tons	600	1,365	2,067	+ 702
Zinc ore and conc.	Tons	9,264	36,007	51,937	+ 15,930
Non-metalliferous mining products:					
Asbestos	Tons	10,010	34,398	33,008	− 1,390
Magnesite.....	Tons	3,143	7,693	9,483	+ 1,790
Sulphur.....	Tons	32,346	113,792	139,993	+ 26,201

*Excluding bismuth alloys. †Including cupreous iron pyrites.

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Readers will notice that the list of price movements given below has been rearranged. This has been given broader basis by the inclusion of platinum, asbestos, and other types of share. Due to lack of space, it has inevitably been necessary to cut out some quotations, but every effort has been made to retain those which generally fluctuate from week to week.

The list emphasizes the gloomy picture which the Stock Exchange presented during the period. Falls occurred in almost every section. Gilt-edged stocks were among the worst hit and in the early part of the week there was some heavy selling and prices fell sharply. Latterly, the market steadied, but remains very unsettled. This weakness denotes the severe break in confidence which has occurred.

Kaffirs, encountered little interest and prices generally were marked down. Exceptionally, Crown Mines were better, investors anticipating the more optimistic review by the chairman at this week's meeting. The report will be published as we go to press. Van Dyk also improved and buying was attributed to hopes of good developments from the No. 5 shaft as the site of the VS.6 borehole is approached. Anglo-American Corporation were steadier and some switching from other finance houses was reported. Such concerns as Union Corporation are likely to be subject to E.P.L. Consolidated Mines Selection again declined and currently returns the highest yield among the main group of Rand finance houses. Apart from the fact that the company is registered in the U.K. the recent Anglo American issue was principally underwritten by this concern.

Diamond shares were also out of favour. Casts in particular met selling due to fears of E.P.L.

Coppers were almost the only firm market. The releases to industry from the U.S. stockpile encouraged buyers in the hope of continued strength of the metal price. Tanks were a good feature following French buying. The chairman of the company recently resigned and there will be considerable interest over the appointment of a successor. This is unlikely to be announced for another month. A report appeared in a Canadian paper stating that Selection Trust had obtained permission to prospect and examine the possibility of acquiring an interest in the Dominion's mining industry. To date, the U.K. Treasury has forbidden all exports of dollars on this type of venture. The market received a fillip from the announcement that an application had been made to the Treasury for the emigration of the R.S.T. group of companies. The board considers that such a move is necessary due to changing political developments in Northern Rhodesia; it seems that they have a strong case.

Tin shares were again down. The E.P.L. concessions had little effect upon the market and doubts centred on the future of the metal price. The Ampat dividend was well received. The company are paying a total of 30 per cent for 1951 as against 15 per cent for the previous year.

Lead/zinc shares again fell away. Trading in lead futures was resumed in New York on May 26 and initial dealings indicate that local opinion is expecting a further fall of half a cent per lb. in the price of lead before the end of July. Due to the decline in price, the Ministry of Materials expects to make a loss on its dealings in zinc and lead. The terms of the new lease for the development of lead/zinc areas in Southern Nigeria were published; these are considered to be both fair and reasonable.

Turner & Newall shares fell on market disappointment with the maintained interim dividend. Cape Asbestos, on the other hand, held up well after going X.D. to the increased distribution. The company has joined with the Johns-Manville Corporation to produce in the U.K., Marinite, a fire-proof boarding which is used in joinery work and shipbuilding. It is hoped that there may be considerable scope for the article in this country.

FINANCE	Price May 28	+ or − on week
African & European	2⅜	−⅛
Anglo American Corpn.	6	−⅛
Anglo-French	19/-	−6d
Anglo Transvaal Consol.	28/9	
Central Mining (£1 shrs.)	33/9	−1/3
Consolidated Goldfields	42/6	−1/10½
Consol. Mines Selection	24/4½	−7½d
East Rand Consols	3/1½	
General Mining	4⅛	−⅛
H.E. Prop.	30/-	−1/10½
Henderson's Transvaal	9/9	−9d
Johnnies	2⅞	−⅛
Rand Mines	4⅛	
Rand Selection	36/3	−7½d
Strathmore Consol.	28/1½	+7½d
Union Corporation	8⅛	−⅛
Vereeniging Estates	3⅛	−⅛
Writs	29/4½	−7½d
West Wits	42/6	−1/10½
RAND GOLD		
Blyvoors	39/6	−1/-
Brakpan	19/6	−3d
City Deep	29/4½	−7½d
Consol. Main Reef	31/3	
Crown	43/9	+1/3
Daggas	3⅛	−⅛
Doornfontein	22/9	−1/3
Durban Deep	3⅛	
E. Daggas	19/4½	−7½d
E. Geduld ... (4/- units)	40/7½	−1/3
E. Rand Props.	3⅜	−⅛
Geduld	6⅛	−¼
Govt. Areas	11/3	−7½d
Grootvlei	32/6	−9d
Libanon	13/-	−3d
Luipaards Vlei	18/-	
Marievale	21/-	−9d
Modderfontein East	26/3	−1/3
New Kleinfontein	28/9	−1/3
New Pioneer	12/6	−1/-
Randfontein	17/9	−1/6
Robinson Deep	10/9	−3d
Rose Deep	26/10½	−7½d
Simmer & Jack	5/6	−6d
S.A. Lands	40/-	−1/3
Springs	7/6	−4½d
Stilfontein	23/9	−6d
Sub Nigel	2⅛	−⅛
Van Dyk	11/9	+9d
Venterspost	21/-	−6d
Vlakfontein	17/-	−3d
Vogelstruisbult	26/6	−3d
West Driefontein	5⅞	−⅛
W. Rand Consolidated	48/9	
Western Reefs	41/3	−1/3
O.F.S.		
Freddies	7/6	−1/-
Freddies N.	6/3	−9d
Freddies S.	7/3	−10½d
F.S. Geduld	2⅜	
Geoffries	16/9	−1/-
Harmony	18/3	−1/-
Loraine	6/-	−3d
Lydenburg Estates	9/9	−6d
Merriespruit	3/9	−3d
Middle Wits	14/9	−1/3
Ofsits	38/9	−7½d
President Brand	17/10½	−1½d
President Steyn	17/9	−3d
St. Helena	16/9	−3d
U.F.S.C. & G.	6/9	−6d
Virginia Ord.	10/6	−9d
Welkom	28/1½	−1/3
Western Holdings	3⅛	−⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/3	−1½d
Ariston	5/1½	+4½d
Ashanti	17/6	−1/-
Bibiani	6/-	−6d
Bremang	2/3	−3d
G.C. Main Reef	2/10½	−1½d
G.C. Selection Trust	6/-	+4½d
Konongo	1/10½	+4½d
Lyndhurst Deep	1/-	−1½d
Marlu	1/3	−1½d
Taquah & Abosso	4/-	
AUSTRALIAN GOLD		
Boulder Perseverance	2/3	
Gold Mines of Kalgoorlie	9/3	−3d
Great Boulder Prop.	5/3	
Lake View and Star	15/-	−3d
Mount Morgan	17/7½	+1/7½
North Kalgurli	12/9	
Sons of Gwalia	9/-	+4½d
South Kalgurli	8/3	+4½d
Western Mining	7/6	+6d
MISCELLANEOUS GOLD		
Cam and Motor	38/9	−7½d
Champion Reef	7/-	
Falcon Mines	7/10½	
Globe & Phoenix	23/3	−6d
G.F. Rhodesian	6/1½	
London & Rhodesian	4/6	
Motapa	1/6	−1½d
Mysore	4/-	
Nundydroog	5/6	
Oceanic	2/9	
Oroville	10/9	−3d

MISCELLANEOUS GOLD (contd.)	Price May 28	+ or − on week
St. John d'El Rey	23/9	−1/3
Zams	36/9	−6d
DIAMONDS & PLATINUM		
Anglo American Inv.	4⅛	−⅛
Casts	27/9	−2/-
Cons. Diam. of S.W.A.	3⅛	
De Beers Defd. Bearer	62/9	−6d
De Beers Pfd. Bearer	13⅛	
Pots Platinum	8/10½	−6d
Watervaal	14/6	−10½d
COPPER		
Chartered	55/3	+3/-
Esperanza	3/10½	−4½d
Indian Copper	3/6	
Messina	3⅜	
Nchanga	6⅜	+⅛
Rhod. Anglo-American	54/1½	+4½d
Rhod. Katanga	8/10½	−6d
Rhodesian Selection	14/10XD	+1½d
Rhokana	19⅛	+⅛
Rio Tinto	20⅛	+⅛
Roan Antelope	12/10XD	+9d
Selection Trust	37/3	−1/6
Tanks	59/-	+1/3
Tharsis Sulphur Br.	40/-	
TIN (Eastern)		
Ayer Hitam	21/6	−2/-
Bangrin	7/9	−4½d
Gopeng	10/-	−9d
Hongkong	6/6	
Ipoh	20/9	−9d
Kamunting	9/9	−10½d
Kepong Dredging	6/9	−6d
Kinta Tin Mines	13/6	−6d
Malayan Dredging	21/3	−1/6
Pahang	13/4½	−1/4½
Pengkalen	8/3	
Petaling	13/4½	−4½d
Rambutan	11/10½	−7½d
Siamese Tin	20/6	−3d
Southern Kinta	13/1½	−10½d
S. Malayan	22/6	−1/3
S. Tronoh	15/-	−1/3
Sungei Kinta	17/6	
Tekka Taiping	7/6	−6d
Tronoh	21/6	−1/3
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	8/7½	−1½d
Beralt Tin	20/-XD	−9d
Bisichi	3/4½	−3d
British Tin Inv.	13/9	−1/3
Ex-Lands Nigeria	4/1½	−4½d

TIN (Nigerian and Miscellaneous) contd.	Price May 28	+ or − on week
Geevor Tin	10/10½	−1/1½
Gold & Base Metal	3/-	−3d
Jantar Nigeria	5/7½	
Jos Tin Area	10/6	
Kaduna Prospectors	4/-	
Kaduna Syndicate	5/6	
London Tin	4/9	−7½d
United Tin	1/10½	−3d
SILVER, LEAD, ZINC		
Broken Hill South	39/9	−1/6
Burma Corporation	1/7½	
Consol. Zinc	21/6XD	−1/9
Lake George	12/6	−1/3
Mount Isa	29/6	−1/9
New Broken Hill	22/3XD	−1/-
North Broken Hill	53/-	−1/4½
Rhodesian Broken Hill	14/10½	−3d
San Francisco Mines	30/-	−9d
Uruwira	4/7½	−4½d
MISCELLANEOUS BASE METALS & COALS		
Amal. Collieries of S.A.	44/4½	
Associated Manganese	38/-	−2/-
Cape Asbestos	16/-XD	−3d
C.P. Manganese	42/6XD	−1/6
Consol. Murchison	43/9	−2/6
Mashaba	8⅛	−1d
Natal Navigation	3⅜	
Rhod. Monteleo	11/-	
Turner & Newall	80/3	−4/9
Wankie	15/6	+6d
Witbank Colliery	2⅛	
CANADIAN MINES		
Dome	$35	
Hollinger	$25½	
Hudson Bay Mining	$97	+$1
International Nickel	$76	+$½
Mining Corpn. of Canada	£5⅛	−⅛
Noranda	$137½	−$1½
Quemont	£7⅜	
Yukon	4/7½	−3d
OIL		
Anglo-Iranian	5⅜	−⅛
Apex	41/3	−2½d
Attock	21/-	−10½d
Burmah	63/1½	−5/7½
Canadian Eagle	31/9	−1/9
Mexican Eagle	22/7½	+1½d
Shell	4⅛	−⅛
Trinidad Leasehold	27/-	−3/-
T.P.D.	25/-	−1/10½
Ultramar	30/6	−1/-

COMPANY NEWS AND VIEWS

Gopeng Has a Good Year

Gopeng Consolidated, the principal producing company in the Redruth-Malayan Tin group, reflects in its accounts for the year to September 30 last the high tin prices which prevailed during the early part of 1951 resulting in an average for the year of £641 per ton ore compared with £393 in the preceding twelve months. Although output of tin at 800 tons was a little below the figure for the previous year, profit before tax rose from £273,224 to £474,905, despite an increase in mining costs of some £70,000. Some 65 per cent of this increase was absorbed by taxation but even so the company was able to pay dividends totalling 60 per cent compared with 42½ per cent in the preceding year.

Year to Sept. 30	*Dredge Treated*	*Output*	*Yield per cu. yd.*	*Cost per cu. yd.*	*Per Ton Ore*	
					Cost	*Price*
	(cu. yd.)	*(tons)*	*(lb.)*	*(pence)*	£	£
1950	2,271,700	828	0.81	8.14	93	393
1951	2,187,300	800	0.81	11.79	134	641

Increased mining expenditure is accounted for largely by higher costs of labour and materials and by the considerable expenditure incurred on the deviation of the main pipe line of the Kampar water supply and the regrouping of accommodation for the mine's personnel made necessary by the Emergency Regulations.

Year to Sept. 30	*Tin Proceeds*	*Gross Revenue*	*Mining Costs**	*Profit Before Tax*	*Tax*	*Dividend*
	£	£	£	£	£	£
1950	386,462	428,431	138,391	273,224	151,758	92,511
1951	610,951	696,662	205,251	474,905	282,200	126,151

*Including Government royalty and smelter charges.

Output from the No. 1 paddock showed a small increase over the previous year, yield per cu. yd. remaining substantially unchanged at 0.93 lb. per cu. yd. The yield from the No. 2 paddock however showed considerable improvement at 1 lb. per cu. yd. as compared with 0.79 lb., a factor which approximately offset a decline of over 15 per cent in the area treated. Progress at No. 3 paddock, which had been so rapid during the previous year, was again hindered by subsidence of ground under the upraise pipes and an alternative site for the elevator and feed box were prepared against the necessity of a further move. The yield per ton declined from 0.69 lb. per cu. yd. in 1950 to 0.43 lb., although this was offset by an increase of 40 per cent in the area treated.

The water supply was consistent throughout the year, although somewhat below average during the last six months.

Although the price which will have been obtained for tin ore during the first half of the current year will have been considerably below that of the year under review this factor promises to be counterbalanced, at any rate in part, by an increasing output, which for the first six months of the current financial year totalled 444 tons compared with 800 for the whole of the year to September last.

As we write, the eventual fate of the Malayan tin industry under E.P.L. remains to be settled in the House, but whatever concessions may finally be won for the industry scarcely seem likely to do justice either to the importance of Malayan tin as a dollar-earner or to the inherent risks of the industry alike from Communist banditry and from the characteristically wide fluctuations in the price of tin.

Lead-Zinc Venture in Southern Nigeria

Although agreement in principal was reached some little time ago between the Nigerian Government, American Smelting & Refining, and the Mines Development Syndicate (West Africa) regarding the terms under which A. S. & R. will undertake to provide the capital required to bring into production the lead-zinc areas held by Mines Development Syndicate in Southern Nigeria, legislation in the Nigerian Legislature has been necessary to give the Governor the authority to grant the necessary mining leases.

Particulars have now been announced of a new Bill which has been placed on the Statute Book in Lagos. This ordinance grants the Syndicate a special exclusive prospecting licence and authorizes the Governor to grant mining leases to the Syndicate. The prospecting licence covers approximately the same area as the Syndicate's existing licence but is exempt from the usual provisions regarding part surrender annually and extends to 1957, whereas the existing licence was due to expire next March. Mining leases will be granted for a thirty year period, the lessee having the right of renewal for a further 30 years.

Payments to the Nigerian Government will be on a sliding scale, based on the ratio of yield to recovery, which will range from 11 per cent of the yield when this is not greater than 5 per cent, up to 32 per cent of the yield where it amounts to 70 per cent or more. These payments will be subject to a reduction of 25 per cent for the first 18 years of the lease or for 15 years from commencement of production on a commercial scale, whichever is the shorter period. There will also be a minimum payment of one per cent of sales value f.a.s. Nigerian port which will be allowable as a reduction from the above sliding scale payment in any one year.

The lessees will be required in due course to make an offer to Nigerians to subscribe for share and loan capital up to a total offering of not less than £300,000 or 14 per cent of the subscribed share and loan capital, whichever is the greater.

Mines Development Syndicate is a private company of which the entire share capital is held by Gold & Base Metal Mines of Nigeria, London & African Mining Trust, The National Mining Corporation, United Tin Areas of Nigeria, Ribbon Valley (Nigeria) Tin Fields, Ex-Lands Nigeria and Nigerian Consolidated Mines. The extent to which these companies stand to benefit from this new venture through the Mines Development Syndicate must depend upon the terms, which have yet to benefit from this new venture through the Mines Develop- by A. S. & R. It is this latter company which has been responsible for the recent prospecting operations and as indicated above will be finding the necessary capital for the venture.

Another "Geoffries" Borehole Result

General Exploration Orange Free State Ltd. announce that Borehole B.H.2 on farm Rosedale 838 intersected the Ventersdorp lower lava at 4,400 ft. and that complete core recovery gave a value of 34.6 dwt. over 24 in. equivalent to 830 in.-dwt. This borehole, lying mid-way between though slightly west of a line between V.D.H.1 and R.D.1 furnishes further evidence of the consistent values which appear likely to exist in the upper reefs over a distance of some 4 to 5 miles running south-south-east from the neighbourhood of the common boundary of Weltevreden 205 and Loraine Gold Mines through to the southern boundary of Rosedale 898 and possibly beyond.

This announcement follows closely on the report from Freddies last week that borehole E.R.K.1 had intersected an uncorrelated conglomerate band at 4,949 ft. assaying 22.72 dwt. over 44.45 in. equivalent to 1,005 in.-dwt. This borehole also fits into the general pattern referred to above being located about one mile south east of R.D.1 on the common boundary of Rosedale 898, Klein Begin 911, Freddies North property and Energie 896.

These further good borehole results must strengthen the possibility which has been foreseen for some time that one or possibly two new mines will eventually be launched in this area, in which the General Mining and Anglo Transvaal groups are principally interested.

Central Provinces Manganese Pay 50 Per Cent Free of Tax

The net profit of Central Provinces Manganese Ore for the year 1951, after providing for all expenses, including both U.K. and Indian taxation, totalling £1,257,500, rose to £643,386 compared with £514,971. To this net figure was added £176,357 brought in, making £819,743 (£700,617) available. The total dividend distribution of 5s., tax free, per 10s. share on the £1,000,000 issued capital comprised an interim payment of 1s. (same) a final of 2s. (same) and a bonus payment of 2s. (6d.) which absorbed £500,000 compared with £350,000 in the preceding year. The sum of £100,000 against £150,000 was allocated to general reserve and after transferring £10,000 (nil) to the workers' welfare fund and £22,073 (£21,569) to staff funds, the balance remaining to be carried forward was £185,066 compared with £176,357 in the previous year.

RAND AND O.F.S. QUARTERLY REPORTS

Extra revenue from premium gold sales last quarter did not show the expected decline on the previous three months, although there was some variation in the amounts received by the different mines, compared with the previous period. Averaging the net premium received over the total gold output for the quarter, the additional revenue accruing to the mines was about 8s. 6d. per oz. over the official level of 248s. 3d. This compared with 13s. 9d. in the first quarter of 1951 when premium sales were at their highest since they commenced in September, 1949. Currently, the premium is worth about 5s. 6d. an oz. to the mines, so that if it persists, a drop of fully one-third in revenue from this source during the present quarter is indicated.

The total amount from premium sales in the March quarter of this year was £1,216,334 compared with £1,188,742 in the preceding quarter and the peak of £1,937,977 in the first three months of 1951.

Gold production and working profit figures for the first quarter of the year—based on the land producers' monthly returns—were published in our issue of April 11, page 375. The notes which follow are therefore devoted to development work achieved during the period.

PROGRESS IN THE ORANGE FREE STATE

Amongst the sixteen Orange Free State companies engaged in active operations in the field, those under the aegis of Anglo American Corporation—seven in number—indicated good progress in their March quarterly reports.

The working loss by Welkom during the first three months of £102,470 had already become known through the returns, but the mine is now making profits. Development amounted to 19,961 ft. compared with 22,421 ft. in December quarter, and of the 4,140 ft. sampled on the Basal reef, 55.92 per cent proved payable, averaging 373 in.-dwt. 116 ft. were driven on "B" reef and of the 115 ft. sampled, 21.74 per cent were payable averaging 205 in.-dwt.

The first developments of Western Holdings were announced in the March quarter. They did not start until the quarter was well advanced and the footage, as a consequence, was small. Of the 120 ft. sampled, 96 per cent was payable, averaging 149.6 dwt. over 4 in., making 599 in.-dwt.

President Steyn started underground reef development early this year. By the end of March, 526 ft. had been driven, of which 26 ft. were on the reef, 60 per cent of the 25 ft. sampled being payable with an average of 38.3 dwt. over 9.3 in. The company has subsequently announced intersection of the Basal reef in No. 2 shaft at 4,963 ft., giving a value of 966 in.-dwt. Present development plans are for the two shafts to be linked underground as quickly as possible.

Although President Brand was not able to report that either of the two shafts had reached the Basal reef, the No. 1 shaft is expected to intersect the reef during the current quarter. Meantime a borehole put down with the object of planning future development has given a core assay value of 3,253 in.-dwt.

Shaft sinking on Free State Geduld was delayed by the intersection of water-bearing fissures. On Loraine, No. 1 shaft was sunk at a record speed and at the end of March, had only 781 ft. to go to the calculated horizon of the Basal reef.

Expansion of underground work at St. Helena, under the technical control of Union Corporation, brought the total footage for the three months to 15,840 ft. (against 13,475 ft.), while payability rose from 29 per cent to 36 and values from 302 to 347 in.-dwt.

Shaft sinking continued at Harmony (Central Mining). At end of the quarter the ventilation shaft was 3,699 ft. down and No. 3 shaft, 3,173 ft. If sinking progresses at same rate, the former should cut the reef probably before September and the latter by the end of the year.

"Geoffries" completed two further boreholes in the area north-west of Odendaalsrus during the March quarter. N.W.6 hole gave no reef intersections and the other, V.D.H.6 cut uncorrelated upper reefs. There was no further evidence of the "rainbow reefs," which have created so much interest in the Van den Heversrust, continuing across the strike.

Borehole intersection in E.R.K.1 was recently announced by "Freddies" (Johannesburg Consolidated), situated on the common boundary of farms Klein Begin, Rosedale, Energie and the Freddies North Lease Area. In the long-term this may mean that the north-western part of Freddies North property may contain economic ore over and above the possibilities of the Basal Leader reef horizon. The Company's March quarterly confirmed the intersection of the A, B and Basal reefs in No. 2 shaft. Owing to faulting the Basal Reef was not intersected in No. 1 shaft.

Since giving progress of shaft sinking during the first three months of the current year, Freddies South has announced that the Basal reef has been intersected in No. 2 shaft averaging 67 dwt. over 35 in. In No. 1 shaft the Basal reef was cut in the December quarter at 4,790 ft. giving 162 in.-dwt.

Virginia Gold (Anglo Transvaal) reported that its reduction plant was sufficiently advanced for major construction work to be suspended pending further mine development. Of the 2,040 ft. of reef sampled from No. 3 shaft, 28 per cent was payable averaging 9.49 dwt. over 25.6 in. On Merriespruit, No. 1 shaft was sunk to a depth of 2,788 ft., but no sinking was done on No. 2 vertical shaft.

RAND DEVELOPMENT RESULTS

Central Mining-Rand Mines Group.—The quarterly reports of members of the Central Mining group contained few surprises so far as development work was concerned.

Blyvoor slowed down work a little and the payable footage exposed was the smallest for two years. Of the 9,556 ft. developed (against 11,079 ft. in the previous quarter), 3,375 ft. were sampled of which 94 per cent was payable, value being 676 in.-dwt.—the best for some time. Average values at East Rand Proprietary fell to 407 in.-dwt. from the December quarterly result of 477 in.-dwt., but the figure has tended to be erratic and the important point is that values over a period have continued to be high.

Although City Deep's development and footage sampled—5,600 against 5,825 ft.—did not vary much, the in-dwt. value of 278 (against 387) was the lowest for some time. It could not, however, be read as evidence of any decided trend as a lot more work has yet to be done in connection with the long-term outlook for this Central Rand producer. Crown Mines pay ratio of 40 per cent was about the same, the value being 253 in.-dwt. compared with 229 in.-dwt. Only 13,830 ft. compared with 16,080 were sampled. The set-back in profits—£90,979 against £185,615—was not compensated by the larger amount received from premium gold—£59,342 compared with £57,199.

Modderfontein East doubled its payability at 34 per cent but values were largely unchanged. More footage was sampled—2,955 ft. New Modder's pay ratio was also higher and value—190 in.-dwt.—showed up much better.

Consolidated Main Reef sampled 7,130 ft. for a pay percentage of 46 (48), value being 234 against 216 in.-dwt. Durban Deep's results were also slightly better and a distinct improvement showed itself with Rose Deep where payability of 47 went against 40 per cent and value 356 compared with 308 in.-dwt.

Anglo American Corporation.—Interesting points showed up in the development reports of the Far Eastern Rand gold producers belonging to the Anglo American Corporation.

Although Brakpan accomplished a larger footage of work and more was sampled—13,295 against 11,860 ft.—neither payability at 24 per cent, nor value at 556 in.-dwt., lived up to the high figures announced in the December quarterly (30 per cent pay ratio gave a value of 609 in.-dwt.). Springs main reef leader payability was down to 34 per cent against 42 and value of 319 went against 402 in.-dwt. Although not so much work was done on the Kimberley reef and only 905 ft. were sampled, the pay ratio was substantially better—21 against 12 per cent, but value at 234 in.-dwt. compared with 252.

The improvement on Daggafontein's Kimberley reef payability reported in the December quarter of 44 per cent was not maintained and the ratio went back to the September quarterly figure of 41. That for the Main reef leader was also down as it was in the group's neighbouring mine, East Daggafontein, but the Kimberley reef pay ratio improved to 21 per cent against

15, value rising to 378 in.-dwt. against 222.

A lower footage of work was accomplished by South African Lands and of the 12,900 ft. sampled, 41 per cent (against 45) proved payable; value 426 in.-dwt. (409 in.-dwt.).

Western Reefs, working in the Klerksdorp district, also did less development work in the March than in the December quarter and of the 9,335 ft. sampled, 45 per cent was payable, value being about the same, 382 in.-dwt.

Consolidated Gold Fields.—The feature of the quarterly reports of the mines in the Consolidated Gold Fields group was the further improvement in gold reef values at West Driefontein which rose to 18.2 dwt. Footage advanced was 4,422 ft. and all the 2,000 ft. sampled proved payable, averaging 819 in.-dwt. These good developments were accompanied by notification that the company had postponed uranium production plans. An important step forward in the underground position was the effecting of a connection between the Nos. 1 and 2 shafts. Equipment of the Annan shaft by Doornfontein was completed, as also alterations to the headgear, while satisfactory progress was made in connection with the reduction plant.

Libanon's footage was fairly consistent. Pay ratio of 58 per cent of the 7,310 ft. sampled was exactly the same as in the previous quarter, value being slightly higher at 384 ft. The pay percentage of Venterspost went back from 57 to 48. In June of last year it was 73.

Among the older Central Rand mines of the group—improvement in payability was shown by Simmer & Jack—45 against 42 per cent, while value was higher at 268 in.-dwt.; that of Robinson Deep was slightly lower at 324 in.-dwt. but pay ratio rose from 32 to 38 per cent. Although Luipaards Vlei accomplished more work, a lower footage was sampled of 6,990, the pay percentage being the same as in the December quarter, 63. Value 308 went against 259 in.-dwt.

On the Far Eastern Rand, Sub Nigel's payability was 32 per cent with value rising to 326 against 295 in.-dwt. Vlakfontein's value of 341 in.-dwt. compared with 385; pay ratio was up at 27 per cent; that of Vogelstruisbult was exactly the same as in the previous quarter—47 per cent and value 260 compared with 290 in.-dwt.

Union Corporation.—Among the development results of the Union Corporation's mines, Marievale's main reef pay percentage and value showed up well but on the Kimberley reef they were down; the drop in value being from 434 in.-dwt. in December quarter to 303 in.-dwt. last quarter, while payability was only 17 per cent against 20. The Black reef of Geduld Proprietary gave better results and, although the footage sampled of 1,860 was lower, payability was 39 per cent against 24 and value 267 against 220 in.-dwt. Payability of East Geduld (Main reef) fell sharply from 65 to 45 per cent; value of 185 in.-dwt. compared with 189. More development was done—2,604 against 2,342 ft. but footage sampled was 1,495 compared with 1,565 ft.

Although a smaller amount of work was accomplished on Grootvlei, that sampled, 8,585 ft. was in advance of the previous quarter's footage, and while the pay ratio of 55 per cent was better, value was down—210 in.-dwt. against 214. There was little to arrest attention on Van Dyk: a slightly lower footage of work was done and of the 6,960 ft. sampled, 29 per cent (against 31) proved payable, value being 309 in.-dwt. against 230 in.-dwt. The September quarterly pay ratio was 21.5 per cent and value 157 in.-dwt. Of the footage sampled 2,125 ft. was in the No. 5 shaft area, of which the payable reef disclosures were 550 ft., having an average assay value of 9.0 dwt. over 18 in.

Johnnies Group.—In the group of producers belonging to Johannesburg Consolidated, the effect of premium gold sales on working profit was very marked. New State Areas, for instance, wound up the quarter with a normal working loss of £745 but premium sales brought in £8,917 and with sundry revenue, the total profit came out at £12,055. Developments continued to deteriorate and the pay ratio dropped from 40 to 24 per cent although values were better at 218 in.-dwt. (195). Another of the old mines—Government Areas, made a better showing than in the last quarter of 1951; 10,510 ft. were sampled, of which 57 (against 59) per cent proved payable, value rising to 227 against 200 in.-dwt. With premium sales of £44,410, there was a total profit, after tax of £158,545.

A much larger footage was sampled by East Champ d'Or—685 against 375 ft., 37 per cent of which was payable, the value 180 in.-dwt. comparing with 170 in.-dwt. The erratic results of Witwatersrand Gold, which is repaying its capital, showed the pay ratio of the 990 ft. sampled to be less than half that of the previous quarter—20 per cent against 58. Value of 263 went against 258 in.-dwt.

The most popular mine of the group—Randfontein, sampled 12,620 ft. (slightly more than previously), of which 29 per cent against 32, proved payable and gave a value of 234 in.-dwt. compared with 261. Total profit (after tax and taking into account premium gold sales of £56,628) amounted to £131,103.

General Mining.—Although West Rand's values dropped slightly, the pay ratio was much about the same—55 per cent. Development work amounted to 20,369 ft., of which 9,145 ft. were sampled. The other member of General Mining's group, South Roodepoort, did slightly more work and of the 3,890 ft. sampled, 32 against 35 per cent was payable, while the value at 268 in.-dwt. compared with 289 in.-dwt. A feature of the quarter's financial results was the gold premium which brought in £10,040 against £4,579 in the December quarter, though working profit of £65,245 was about the same.

Anglo Transvaal.—Rand Leases developments on the Main reef series gave payability of 63 per cent with average values of 255 in.-dwt. This compared with 60 per cent and 285 in.-dwt. in the preceding three months. Both working profit and gold premium income were only slightly lower than in the December quarter.

Strathmore.—The outstanding point in the March quarterly report of Stilfontein was the first published estimate of ore reserves. Tonnage in sight was placed at 1,063,000 tons of an estimated value of 7.3 dwt. After fifteen months of underground development, the mine is already well supplied with ore to meet the initial crushing of 50,000 tons per month which is expected to be reached towards the end of this year. Milling is expected to commence shortly.

Company Shorts

Gold Coast Selection Trust's March Quarterlies.—Apart from Ariston which showed a small increase in working profit the other producers in the Gold Coast Selection Trust group all showed lower working profits for the March quarter, as compared with the last quarter of 1951. All five companies also recorded a reduced revenue from sales of gold at premium prices, reflecting the progressive fall in the free market price of the metal. The results for the June quarter should, however, show some improvement in this latter respect now that West African mines are permitted to dispose of their entire output at free market prices instead of the 40 per cent which obtained up to the end of April.

The following are the comparative profit figures for the members of the group for the past two quarters.

Company	*Working P'f't*		*Premium Sales*		*Total Profit*	
	Dec. Qtr.	*March Qtr.*	*Dec. Qtr.*	*March Qtr.*	*Dec. Qtr.*	*March Qtr.*
	£	£	£	£	£	£
Amal. Banket...	98,808	77,219	11,382	9,931	110,190	87,150
Ariston	139,384	144,411	12,248	10,854	151,632	155,265
Bremang.....	51,920	21,730	5,268	2,698	57,188*	24,428
G.C. Main Reef	46,178	36,889	4,209	3,541	50,387	40,430
Marlu.....	36,076	18,385	4,957	4,347	41,033	22,732

*Total excludes £2,195 recovered from a clean-up.

Ariston reports progress in developing the north ore body at the 24th level. At the end of the quarter 1,355 ft. had been exposed averaging 6.7 dwt. over 109 in.

Bremang reports that good progress is being made with the work preparatory to the transfer of the No. 2 dredge from the Ankobra River to the Offin River.

Development work on G.C. Main Reef during the quarter totalled 1,841 ft. Of the 447 ft. sampled 212 ft. proved payable, averaging 10.8 dwt. over 34.4 in.

Marlu reports that the new treatment plant to handle underground ore was brought into operation in February.

Anglo American Investment Trust Pay 60 Per cent.—The profit and loss account of covering Anglo American Investment Trust during the calendar year 1951 showed that revenue from dividends, interest and other sources amounted to £2,382,517, an increase over the previous year's figure of £520,189. General expenses amounted to £25,790 (£24,169), tax liabilities totalled

£111,000 (£120,000) and thus net profit was £2,245,727 compared with £1,718,159 in 1950. Shareholders participated in the improved results receiving 12s. per £1 share against 7s. previously. The sum of £750,000 (same) was allocated to general reserve and the carry forward at the end of the year was £290,560 against £294,833 brought in.

The balance sheet recorded a similar improvement. Share investments at £5,403,978 rose by £114,731, the increase being attributable to the acquisition during the year of 28,600 shares of De Beers Consolidated Mines Deferred Shares and 4,000 shares of Companhia de Diamantes de Angola. The purchase of the de Beers Deferred shares brings the company's total holding in that company to 3,136,943 shares. The market value of the company's investments as at December 31, 1951, taking stock exchange quotations where available and cost in other cases, was £18,572,855, an improvement of no less than £4,473,917 over the previous year's market value.

Welgedacht Repays Further 2s. 8d. Debentures.—Welgedacht Exploration have decided to repay a further 2s. 8d. in cash in respect of each £1 of the original face value of the debentures, leaving 14s. 8d. in the £ outstanding. This repayment will absorb funds totalling £43,224, including approximately £2,328 invested in the names of the trustees for the debenture holders, arising out of the sale of surplus plant and machinery which the trustees have agreed to release, with interest, for debenture redemption.

The repayment will be made and interest at the rate of 5 per cent per annum will be paid on June 30, 1952 to holders of Debentures registered on June 9.

British Borneo Petroleum Increases Dividend.—The accounts for British Borneo Petroleum Syndicate Ltd. to March 31 last again show an increase in profit before tax, the figure for the past year amounting to £275,056, compared with £248,478 for the previous year. The whole of this increase has, however, been absorbed by increased taxation which has risen by an approximately similar amount to £175,000. The Directors recommend a dividend of 1s. 1d. per stock unit free of tax on the increased share capital, compared with a 1s. on the lower issued capital for the previous year.

Selection Trust to Prospect in Canada.—According to a report in a recent issue of the *Northern Miner* the Selection Trust is planning a big-scale prospecting operation to search for mines in Canada. According to this Journal, the British Government is relaxing its restrictions on export of capital to dollar countries to the extent of permitting Selection Trust to use whatever money may be required for exploration and for the financing of any mines which may develop out of the present prospecting programme.

Wiluna Gold's Second Liquidation Distribution.—A second Liquidation Distribution of 6s. per share has been declared by Wiluna Gold Corporation and will become payable on or about June 11, 1952. This make a total of 13s. 6d. per share to date and practically completes the distribution of the assets, the company states. There should, however, be a few pence per share available when the remaining assets of the subsidiary company, which are of no appreciable value, have been realized.

Mount Lyell Awaits Full Results.—The Mount Lyell Mining and Railway Company have announced that they have decided to await the figures for the full year ending September 30 next before deciding upon the payment of a dividend out of profit for the year.

British Metal Corporation (Canada) Ltd.—In the British Metal Corporation's advertisement appearing in the 1952 edition of *The Mining Journal Annual Review*, published last week, it was erroneously stated that Vivian, Younger and Bond Ltd. had offices in Vancouver. In fact, the Vancouver offices are those of the British Metal Corporation (Canada) Ltd. who also have offices in Montreal and Toronto.

London & African Mining Trust announces that in view of the prevailing conditions it has been decided to postpone for the time being the proposed offer of new shares to existing shareholders.

Oakland Metal Increases Paid-Up Capital.—Oakland Metal Co. (OMCOL) has announced that the company's fully paid up capital has been increased from £13,500 to £33,500.

Consolidated Zinc Corporation and **New Broken Hill Consolidated** have announced that their Australian share transfer offices have now been moved from 360 Collins Street to 95 Collins Street, Melbourne.

DURBAN ROODEPOORT DEEP LTD.

The 55th Annual General Meeting of Shareholders was held in Johannesburg on Tuesday, May 27, 1952. **Mr. W. M. Frames,** chairman, presided, and said:

The average yield of the ore milled during 1951 was fractionally lower than that for the previous year but as a result of a substantial increase in the additional income from sales of gold at enhanced prices, together with an improvement of 18,000 tons in the tonnage milled, working revenue rose by £181,686 to £4,839,681.

On the other hand, however, working costs increased by £162,624, due mainly to the higher cost of stores and materials and to further increases in wages and benefits granted to European employees. The working profit at £1,428,684 was in consequence only £19,062 higher than the figure for 1950.

For some time past the industry has been subjected to electric power restrictions which, although they did not adversely affect production at your company's mine during the year, are becoming progressively more severe in their application.

This important and potentially disrupting factor has now reached the stage where the mine has taken practically all possible steps, including the hoisting and crushing of ore on afternoon shifts, to conserve power and reduce peak demands without loss of production. In spite of these measures, however, the situation has deteriorated in the first few months of the current year and it is possible that if the present trend continues loss of tonnage will result and development footage will suffer.

Due to shortage of materials and to the non-delivery of certain items of equipment on order, capital expenditure was not as high as I forecast last year but was appreciably higher at £234,269 than in 1950.

In the Directors Report it is stated that the estimated expenditure on capital account during the current year will amount to approximately £620,000, but due to the suspension of sinking operations in No. 6A sub-vertical Shaft and to recent advices that deliveries of equipment will again not come up to expectation, actual expenditure is unlikely to exceed £365,000 which will be incurred principally on equipping Nos. 6 and 6A Shafts, on European housing, on further pumping equipment and on the preparation of a new slimes dam area.

The development accomplished during the year amounted to 79,921 ft., representing a drop of 1,207 ft. on the previous year's total, while the footage sampled at 42,230 was 4,060 ft. less. The decreased development on reef was partly attributable to the necessity for a higher proportion of off-reef development in crosscuts, footwall drives and ore passes. In consequence, certain blocks of ore were not completely developed at the year-end and have yet to be included in the ore reserves. Considerable footage was devoted to the opening up of a portion of the area tributed from New Durban Gold and Industrials Ltd., where little payable ore was encountered. In addition to the reduction of certain block widths referred to in the Consulting Engineers' Report, the ore developed during the year on the Main Reef was brought in at an average width of 58.5 in. compared with 68.9 in. in the previous year. As a result of these factors, the payable ore developed at 1,189,000 tons was lower by 923,000 tons, while the value was 0.1 dwt. higher at 4.1 dwt. per ton. On the Main Reef Leader operations on a limited scale were almost entirely confined to the eastern section of the mine and again exposed a negligible quantity of payable ore; on the South Reef, principally in the central and eastern portions of the mine, a small tonnage of ore was opened up. As in recent years, most of the reef development was on the Main Reef in the lower levels to the west of 5A Shaft, where values were satisfactory.

On the Kimberley Reef the major portion of development was between Nos. 5 and 6 Shafts. An increased footage of reef development was done from No. 9 prospect winze just south of No. 6 Shaft and a further winze, 2,250 ft. west of No. 9 winze, was started towards the end of the year. In general, satisfactory values were exposed on this horizon with a slightly higher average payability than in 1950. The growing importance of this reef is evidenced by the fact that at the end of the year more than 15 per cent of the available ore reserve for the mine was on the Kimberley Reef, compared with 11 per cent a year previously. In addition, this reef made a substantially higher contribution to the tonnage of ore milled and in the absence of unforeseen events delaying the completion of surface arrangements for handling the ore from No. 8 Shaft, it is confidently expected that 20,000 tons per month will be milled from this source in the near future.

During the year increased rates of taxation were introduced in respect of both mining and non-mining revenue and in consequence provision for taxation was £32,814 higher than the figure for 1950. The Government announced recently that formula taxation for the current year is to remain unchanged, but that the rate applicable to non-mining revenue is to be increased, with retrospective effect from July 1, 1951, by 6d. to 5s. in the £.

The Report and Accounts were adopted.

GOLD FIELDS AUSTRALIAN DEVELOPMENT CO. LTD.

The Nineteenth Annual General Meeting of the Gold Fields Australian Development Co. Ltd., was held on May 22 in London. **Mr. R. H. A. Neuschild** (the Chairman) presiding.

The Chairman in the course of his speech said: The profit and loss account discloses an operating loss for the year of £3,645.

The accounts of the Moonlight Co., the wholly owned subsidiary, are almost entirely referrable to the operation of the Mount Ida Mine as the Porphyry Gold Mine, their other mining asset and in which they hold a one-third interest, remains on a care and maintenance basis.

The Profit and Loss Account shows a profit for the year of £33,574. The consolidated position shows current liabilities of £12,549 against current assets—excluding stores—of £59,212. This is a much improved position compared with that disclosed at December 31, 1950.

By and large the Mount Ida orebody in itself presents no abnormal problems. It is a straightforward mining operation but subject to the usual difficulties inherent to the operation of a remotely-located small mine. A problem has, however, come about by the existence of a cross-course or fissure in the southern end of the mine which has displaced the lode in the lower levels. Although some values have been disclosed on the south side of the cross-course, so far the results have been disappointing. Driving south will be continued with all speed to investigate the lode in this direction.

North of the cross-course the ore body continues to open up satisfactorily. The shaft was deepened to 897 ft. and from the 7th level station at 825 ft. a crosscut was driven which has recently intersected the lode. The reported value of the ore disclosed is 11½ dwt. over a width of 42 in. The development of the ore body at this lowest horizon will be carried out as expeditiously as conditions permit.

Wage increases and the increasing cost of stores and services resulting therefrom are reflected in a lessening rate of profit.

Towards the end of 1951 the Australian Government announced that gold producers would be permitted to sell the greater part of their output on the free market at the ruling premium prices. These sales are handled through the Gold Producers Association which was formed to act on behalf of the industry. As no distributions have yet been made in respect of the premium which has accrued on sales, I regret being unable to give any details of the benefits which have resulted therefrom.

The report and accounts were adopted.

BRITISH ROPES

The Thirtieth Annual General Meeting of British Ropes Ltd., was held on May 27 in London.

Mr. Herbert Smith (chairman and managing director), in the course of his speech, said:

The gratifying results of this year's trading were not anticipated a year ago, and some of the increased profit is due to larger sales in hemp and wire rope goods; the volume of our wire trade was rather less than in 1950 owing to the shortage of steel wire rods—in fact, during the second half of the year our output of wire was down by more than 30 per cent, but we hope that during the current year we shall get back to something like the output we had in 1950, if not more.

The trading profit of the group for the year 1951 was £2,363,000, as compared with £1,613,000 for the previous year. The total assets exceed £10,000,000 and show an increase of over £2,000,000 compared with the previous figures.

The shortage of steel has made it impossible to supply fully the needs of our many customers, and we must still ask their indulgence at any rate for the first half of this present year. Our principal supplier of steel rods has always been the Templeborough Rolling Mills Ltd., with which company we were associated financially until the nationalization of the iron and steel industry, and it may be that in due course we shall have an opportunity of renewing this financial association.

The sales of our three sections give a total figure in excess of any previous year.

The trading results and sales of our Overseas Interests have all been satisfactory and show progress. British Ropes Canadian Factory are building a new and very spacious factory a few miles from their present site.

Our export trade has been severely restricted because of the shortage of our raw material, steel. Consequently, despite the increased demand which continued throughout the year, the volume of our Export deliveries was lower than in 1950.

Your Company's products are of vital importance to the economic life of the community—in fact they are essential to the efficient working of practically every industry in this country. We have fully maintained our contacts overseas and our knowledge of developments in world markets through our programme of overseas visits of both Sales and Technical Representatives. I am, therefore, confident that as and when our steel supplies improve we shall rapidly regain our share of Export Trade.

The report was adopted.

Mining Matters

W. E. Bray & Co., Ltd. are giving a demonstration of the "Brayda" Electric Tower Crane at their factory at Faggs Road, Feltham, Middlesex, on Thursday next at 10.30 a.m.

Mr. Maurice Hely-Hutchinson has resigned from the chairmanship of Tanganyika Concessions and has also resigned his seat on the board. He is retaining his association with the company in a consultative capacity.

Mr. A. E. Leveson has been appointed a Director of the Consolidated Mines Selection Co., Ltd.

Mr. H. A. MacKay has been appointed Managing Director of New Union Goldfields.

Mr. Edward J. Parsons has been appointed London Manager of Small & Parkes in succession to Mr. H. M. Lawrence who has retired. **Mr. A. K. Hebditch** has been appointed London Technical Manager. These appointments will take effect as from May 31 next the same date of which the Company's new London office at 76, Victoria St., S.W.1 (Telephone: Victoria 1845) will be opened. Mr. Parsons and Mr. Hebditch will both work from the new London office. The Small & Parkes' DON service depots at Wimbledon and Leyton will continue as heretofore.

Mr. D. A. Thompson has been appointed chairman and joint managing director of the Granite House Group of companies (The African Manganese Co., African Chrome Mines, Baluchistan Chrome Co., The Chrome Co., Minerals Research Syndicate, and Rhodesia Chrome Mines). **Mr. R. Coward** has been appointed joint managing director of the group.

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DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH: MINERALS UTILIZATION. The Civil Service Commissioners invite applications for a permanent appointment as PRINCIPAL SCIENTIFIC OFFICER in the Intelligence Division. The person appointed will act as a liaison officer between the minerals industry and sources of information on mineral occurrence and utilization so as to stimulate the better use of mineral deposits in the United Kingdom. Candidates must have been born on or before December 31, 1920. They must have a First or Second Class Honours degree in a science subject, or equivalent qualifications, and should be mineralogists or inorganic chemists with experience in the utilization of minerals or ores.

Inclusive salary scale (London): £1,075 to £1,459 (men); £949 to £1,280 (women). Exceptionally a starting salary above the minimum may be granted according to qualifications and experience.

The appointment is pensionable under the Federated Superannuation System for Universities.

Further particulars and application form from the Civil Service Commission, Scientific Branch, Trinidad House, Old Burlington Street, London, W.1, quoting No. S 4144/52. Completed application forms must be returned by June 26, 1952.

SITUATIONS VACANT ADVERTISED.—*The Notification of Vacancies Order, 1952, must be complied with where applicable.*

Obituaries

CHARLES McDERMID

The death of Mr. Charles McDermid earlier in the month at the age of 84 has removed a personality which exercised a strong influence on institutional organizations, and particularly the Institution of Mining and Metallurgy.

After being educated privately, Mr. McDermid became Assistant Private Secretary to the late Sir David Dale, chairman of the North Eastern Railway Co. From this position he was appointed Assistant Secretary of the Iron and Steel Institute under the late Mr. Bennett Brough. In 1900 he was appointed Secretary to the Institute of Mining and Metallurgy, a post he held until 1939, combining this after 1920 with the secretaryship of the Institution of Mining Engineers, and during the war he acted as Honorary Secretary to the latter society.

He will probably be best remembered for the active part he played in the inception and conduct of the scheme for the organization of the Imperial College of Science and Technology and the integration in it of the Royal School of Mines, and for the organization of the Bessemer Memorial Fund, of which he was Honorary Secretary. Later he conceived and worked to bring about collaboration between the mining institutions in the Empire and organized the first Mining and Metallurgical Congress in London in 1924, out of which grew the Empire Council of Mining and Metallurgical Institutions of which he was for many years Honorary Secretary, and through which Congress meetings in Canada in 1927, in South Africa in 1930, and in Great Britain in 1949 were successfully staged to be followed by a similar Congress in Australia next year. His success in securing the support of the Wernher-Beit interests to finance the Imperial College of Science and Technology and the Bessemer Memorial Fund led him to attempt the more ambitious scheme of providing a centre in London for the headquarters of the institutions associated with the mineral and metallurgical industries, and to afford a forum for mining engineers and metallurgists visiting London from abroad. Differences of opinion, however, and the general slump which followed the American collapse in 1929 caused the failure of this notable plan for closer co-ordination of the mining industry and its technical leaders. Possibly Mr. McDermid's conceptions were in advance of his time, and we may yet see its inspiration exercising an effect in the closer co-ordination of Commonwealth mining and metallurgical interests. He travelled extensively in Canada, the United States, South Africa, Europe and Scandinavia and was a strong advocate of the closer co-operation of Great Britain and the United States, and particularly of the mobilization of their resources in the event of war.

HARRY RICH

We regret to record the sudden death in London recently of Mr. Harry Rich, the well-known director of a number of Redruth controlled tin mines in Malaya, at the age of 82.

Mr. Rich who had resided for many years at Redruth was Chairman of the Governors of the Camborne School of Mines and of South Crofty; Deputy Chairman of Tronoh and Southern Tronoh; and on the Boards of Gopeng, Tekka and Tekka-Taiping.

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The figures given indicate the values we placed on these items of plant but we are prepared to give favourable consideration to any offer which may be submitted for any items and any further information which may be required can be obtained from Dow-Mac (Plant & Transport) Limited, Tallington, Stamford, Lincs.

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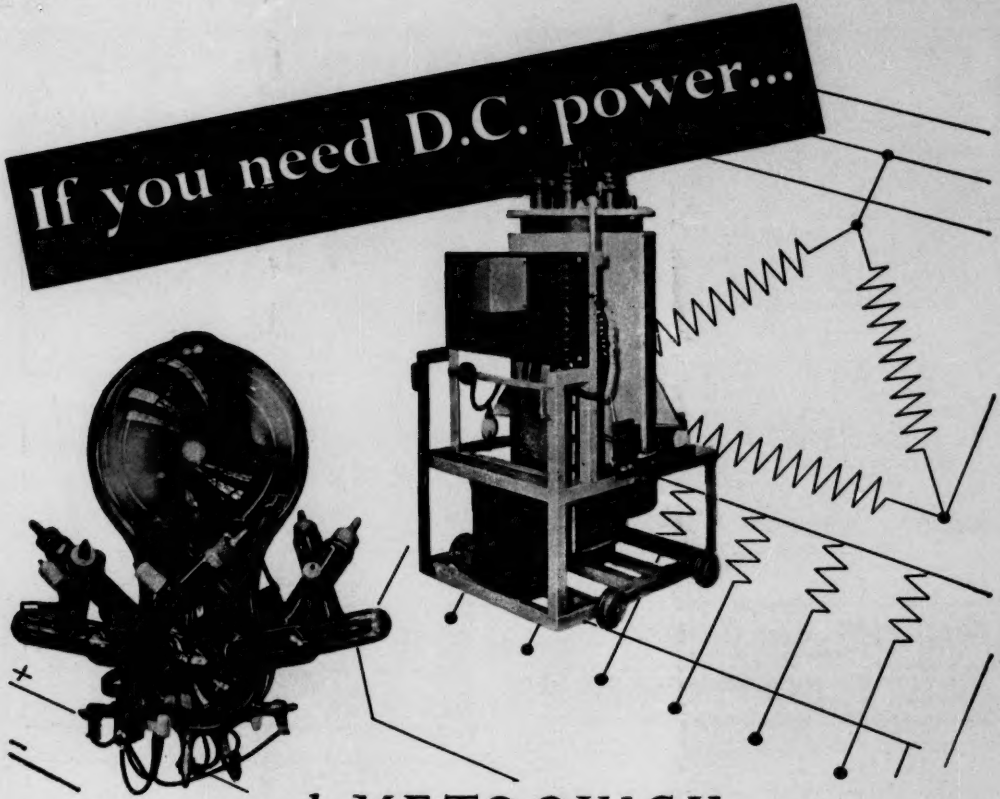

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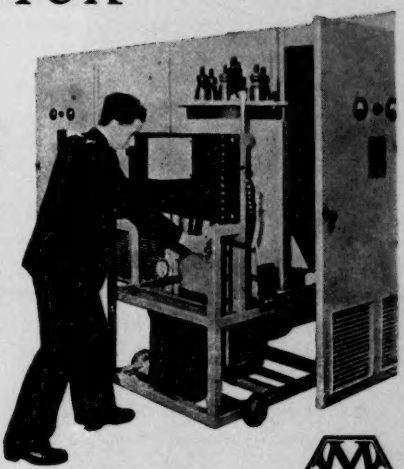

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